

AMERICAN JOURNAL OF OPHTHALMOLOGY

Incorporating
THE AMERICAN JOURNAL OF OPHTHALMOLOGY..... Adolf Alt 1884
THE OPHTHALMIC RECORD..... Giles C. Savage 1891
ANNALS of OPHTHALMOLOGY..... James Pleasant Parker 1892
ANALES DE OFTALMOLOGIA..... M. Uribe-Troncoso 1896
OPHTHALMOLOGY..... Harry V. Würdemann 1904
OPHTHALMIC YEAR BOOK AND LITERATURE..... Edward Jackson 1904-11

EDITORIAL STAFF

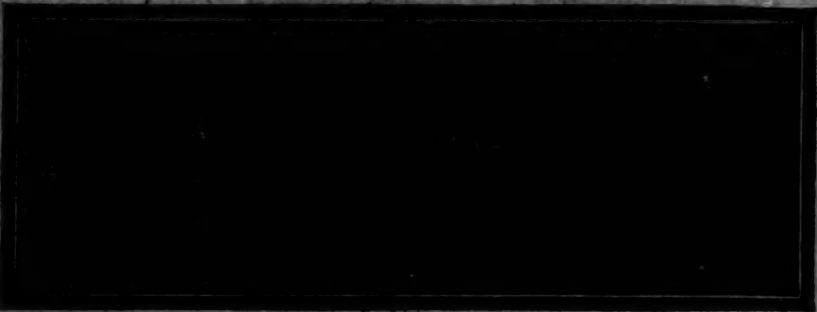
ADOLF ALT CASEY A. WOOD
M. URIBE-TRONCOSO HARRY V. WÜRDEMANN
MEYER WIENER EDWARD JACKSON, *Editor*
CLARENCE LOEB, *Associate Editor*

COLLABORATORS

FRANK ALLPORT, *Chicago*; HUGO W. AUFMWASSER, *Denver*; HANS BARKAN, *San Francisco*; ARTHUR J. BEDELL, *Albany*; EDMOND E. BLAAUW, *Buffalo*; MELVILLE BLACK, *Denver*; NELSON M. BLACK, *Milwaukee*; FRANK E. BRAWLEY, *Chicago*; WM. E. BRUNER, *Cleveland*; BURTON CHANCE, *Philadelphia*; WM. H. CRIST, *Denver*; GEORGE S. DERRY, *Boston*; EDWARD C. ELLETT, *Memphis*; MARCUS FRINGOLD, *New Orleans*; WM. C. FINNOFF, *Denver*; M. W. FREDRICK, *San Francisco*; HAROLD GIFFORD, *Omaha*; HARRY S. GRADLER, *Chicago*; D. F. HARRIDGE, *Phoenix, Ariz.*; WM. F. HARDY, *St. Louis*; EMORY HILL, *Chicago*; GUSTAVUS I. HOGUE, *Milwaukee*; THOMAS B. HOLLOWAY, *Philadelphia*; CHARLES H. MAY, *New York*; WALTER R. PARKER, *Detroit*; SAMUEL D. RISLEY, *Philadelphia*; GILES C. SAVAGE, *Nashville*; F. MAYO SCHNEIDEMAN, *Philadelphia*; THEODORE B. SCHNEIDEMAN, *Philadelphia*; GEORGE E. DE SCHWEINITZ, *Philadelphia*; T. H. SHASTID, *Superior, Wis.*; CHARLES P. SMALL, *Chicago*; GEORGE W. SWIFT, *Seattle*; WILL WALTER, *Chicago*; JOHN E. WEEKS, *New York*; JESSE S. WYLER, *Cincinnati*; WM. ZENTMAYER, *Philadelphia*; CHARLES ZIMMERMANN, *Milwaukee*. *Foreign*: A. A. BRADFURNE, *Manchester, England*; MARCEL DANIS, *Brussels, Belgium*; HENRY ROBERT ELLIOT, *London, England*; F. M. FERNANDEZ, *Havana, Cuba*; J. DE J. GONZALEZ, *Leon, Mexico*; M. LANDOLT, *Paris, France*; J. KOMOTO, *Tokyo, Japan*; F. P. MAYNARD, *Calcutta, India*; E. E. MONTAÑO, *Mexico City*; SPECIALE CRISTOFORI, *Rome, Italy*; FREDERICK C. TOOKE, *Montreal, Canada*.

*Annual Subscription Ten Dollars in Advance,
Single Copies One Dollar.*

PUBLISHED MONTHLY BY THE OPHTHALMIC PUBLISHING COMPANY,
7 West Madison Street, Chicago, Illinois.



OPTHALMOLOGICAL re-
search has definitely determined
that perfect acromatism is more
nearly approached in the one-piece
bifocal than any other type that the
present development of lens-grind-
ing practise has to offer.

Genuine WELLSWORTH ULTEX
ONE-PIECE BIFOCAL lenses,
made on the most precise optical
machinery by the American Optical
Company, are now dispensed on
oculists' formulae through leading
prescription opticians everywhere.



AMERICAN OPTICAL COMPANY
SOUTHBRIDGE, MASSACHUSETTS, U. S. A.

AMERICAN JOURNAL OF OPHTHALMOLOGY

Vol. I

MARCH, 1918

No. 3

A SATISFACTORY OPERATION FOR MUSCLE SHORTENING OR ADVANCEMENT.

MAJOR WALTER B. LANCASTER, M. D., M. R. C.

BOSTON, MASS.

This paper describes with the help of a full series of illustrations, the form of operation preferred by its author, and gives the reasons for his preference for each part of the procedure. Read before the American Academy of Ophthalmology and Oto-Laryngology October 30, 1917.

The final solution of the problem of muscle shortening or advancement has not been reached—is not likely to be reached. As Poincaré has said, "We do not have two classes of problems in science, those that are solved and those that are not, we have only problems *more or less* solved." I say this that you may not

days before hand. Superficial anesthesia is, of course, easily obtained by dropping 2 to 4 percent cocain solution into the conjunctival sac. This makes the conjunctival incision and isolation of the muscle painless; but when the muscle has been raised on the hook, very little pulling will suffice to cause pain. Once the patient has been hurt, he is made nervous and apprehensive and becomes harder to manage.

To operate satisfactorily, the surgeon must be able to make any manipulations he may find necessary without hurting. If the solution of cocain or other anesthetic is injected subconjunctivally, the

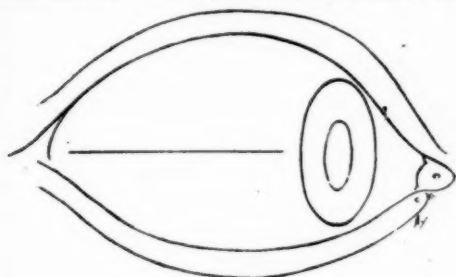


FIG. 1.

Longitudinal conjunctival incision from near cornea toward canthus. (Lancaster.)

think I am attempting to utter the last word on advancement operations. My object has been to find among the multitude of proposed methods the most satisfactory procedures.

For *anesthesia* I prefer local to general. Some patients will be found who are too excitable and uncontrollable for satisfactory operation by local anesthesia. The number of these will be greatly reduced if the surgeon really does not hurt the patient, and if adequate sedatives are administered some hours or

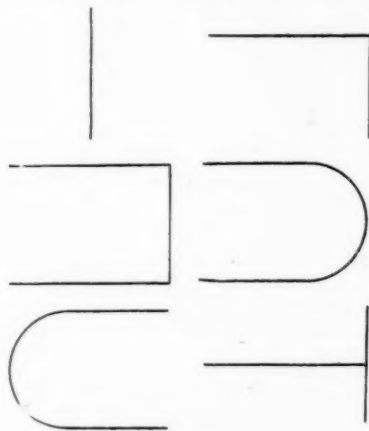


FIG. 2.

Various forms of transverse incisions that too often leave an ugly blemish. (Lancaster.)

edematous infiltration, even if the eye is massaged, is sufficient to interfere with the operation. The most satisfactory way is to inject the novocain or cocain solution beneath the capsule of Tenon, pushing the needle in about 20 mm. alongside the muscle. One, or at the most 2, c. c. of a 1 percent solution of

trouble. The chief advantage is in the cosmetic effect.

With the commoner more or less transverse incisions (Fig. 2), there is too often an ugly blemish, lasting for weeks or even months, where the conjunctiva covering the site of operation is thickened, hyperemic and somewhat



FIG. 3.

Conjunctiva thickened, hyperemic and puckered, after transverse incision. (Lancaster.)

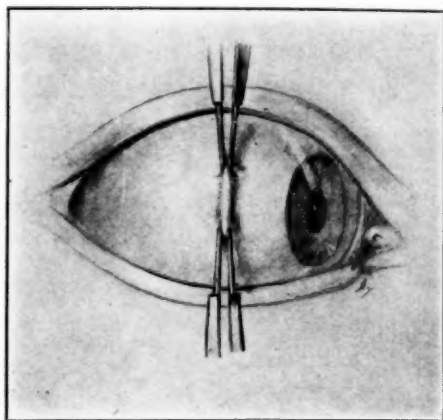


FIG. 4.

Fold of conjunctiva raised by forceps to make conjunctival incision.

novocain, or a smaller quantity of $\frac{1}{2}$ percent cocain, always with a small amount of suprarenin or adrenalin added, will produce so complete anesthesia that when the muscle is lifted on the hook and pulled upon no pain will be felt if manipulations are reasonably gentle. When the patient finds that no pain is felt, he quiets down and remains a satisfactory subject; but once a real twinge is felt, the patient becomes aroused, nervous, apprehensive and hard to manage.

The most satisfactory *conjunctival incision* in my experience is a longitudinal straight incision from near the cornea to near the canthus. (Fig. 1.) This gives a satisfactory exposure of the field, provided the two lips of the wound are retracted either by the assistant or by a temporary suture through each with a forceps snapped on each as a weight. The line of incision is parallel to the chief blood vessels, and so the hemorrhage is less, and the nutrition less interfered with during healing. These are unimportant considerations, because the hemorrhage and healing usually give no

puckered, in marked contrast to the smooth adjoining conjunctiva. (Fig. 3.) Sometimes this blemish is visible for years and may never disappear. It is, therefore, an important consideration. This blemish is not an inevitable consequence of the various transverse incisions or flaps. It is, however, much

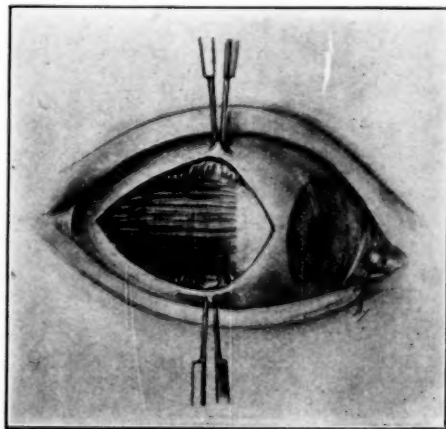


FIG. 5.

Conjunctiva retracted and undermined.

more difficult to secure a satisfactory, smooth and good looking scar with that form of incision. Sometimes the operator has been known to cut too deeply in making his conjunctival incision because he picked up too much tissue with his forceps including muscle as well as con-

The surgeon releases his hold of the conjunctiva and picks up a vertical fold of capsule of Tenon just beyond the margin of the muscle, where it is exposed by the assistant, who still retains his hold of the conjunctiva (Fig. 6). The capsule is cut, making a longitu-

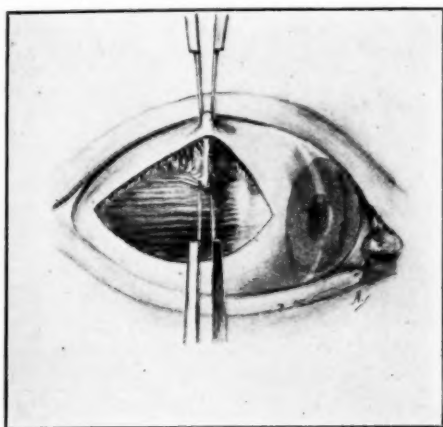


FIG. 6.

Conjunctiva still held by assistant. Capsule of Tenon raised by surgeon's forceps to incise.

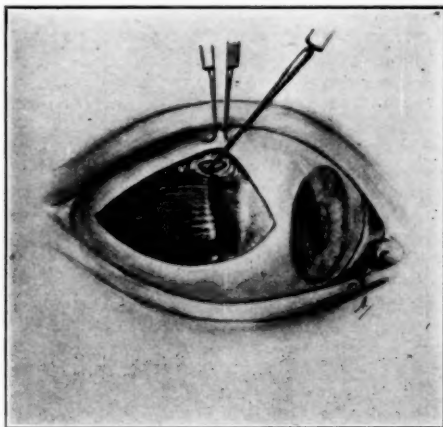


FIG. 7.

Surgeon's forceps laid aside. Hook introduced beneath the tendon raising capsule at lower margin.

junctiva. If the incision is longitudinal, no harm is done, because it is parallel to the muscle fibers; whereas, such an inadvertent cut across the muscle fibers would be a serious mistake. Hence, if a transverse incision is chosen, it is safer to make it anterior to the tendon insertion.

STEPS OF OPERATION.

To make this longitudinal conjunctival incision, the surgeon seizes the conjunctiva about as far from the cornea as the insertion of the muscle and near its upper or lower border, with one blade of the forceps nearer the cornea and one nearer the canthus, thus raising a vertical fold, transverse to the line of the muscle. The assistant seizes this fold in the same way near the opposite border of the muscle, 4 mm. from the surgeon's forceps (Fig. 4). This fold is cut with the scissors and the incision extended toward the cornea and toward the canthus. Without releasing the forceps, each flap is undermined as far as the full width of the muscle (about 10 mm.), or approximately the width of the cornea (Fig. 5).

nal opening. Still holding the fold of capsule in his forceps, the surgeon lays aside the scissors and takes a medium-sized muscle hook, which he inserts thru the opening in the capsule. If the opening has been properly made, the hook is inserted with great ease and passed under the muscle until its point is

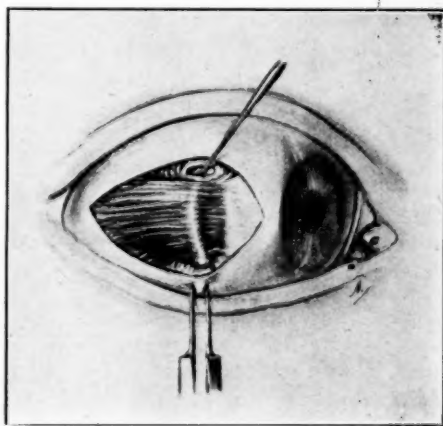


FIG. 8.

Capsule slit at lower margin of tendon permitting hook to come through.

made to lift the capsule at the opposite border of the muscle (Fig 7). The assistant lifts the conjunctiva away from this border of the muscle, and the surgeon transfers the hook to the left hand and with the scissors snips an opening in the capsule over or alongside the hook, permitting it to come through (Fig. 8).

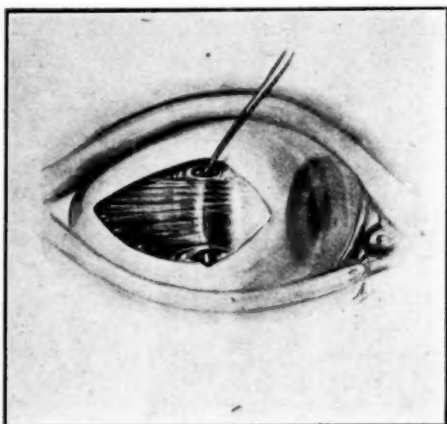


FIG. 9.

Hook fully introduced, point emerging through lower opening in capsule.

Before enlarging these two openings, thus isolating the muscle, make sure that the entire width of the muscle is included (Fig. 9). Not infrequently, the incisions, one or both, are made too near the median line of the muscle and so do not include all the fibers. Remember that the width of the muscle is nearly equal

to the diameter of the cornea, and not one-half that width, as often shown in illustrations.

The two incisions through the capsule should be prolonged by cutting with the scissors (Fig. 10), rather than by introducing two hooks and tearing (Fig. 11).

How long to make these incisions de-

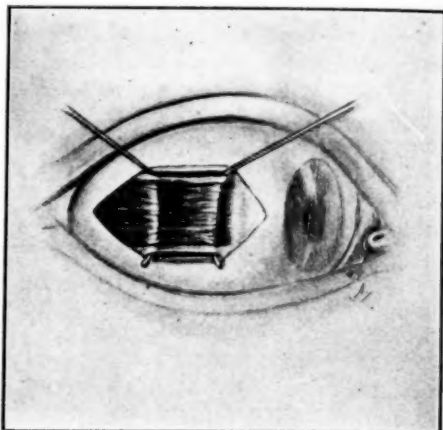


FIG. 11.

Both hooks used to raise tendon ready to introduce the whip stitch.

depends on how much the muscle is to be shortened.

One can stop here and tenotomize the antagonist in the usual way, or this can be done later.

The suture through the muscle to be shortened is next placed. The most satisfactory hold is obtained by a *whip stitch*. A double armed silk suture, not

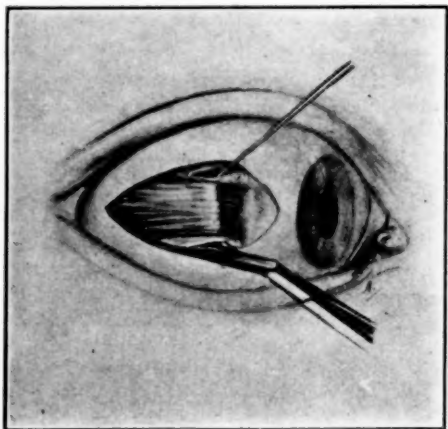


FIG. 10.

Method of isolating tendon by incision with scissors along each edge.

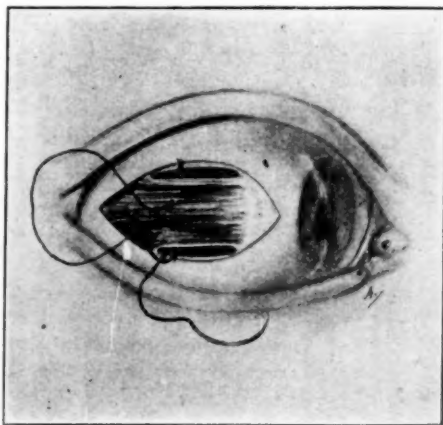


FIG. 12.

Introduction of whip stitch. Upper needle just entered, lower end passed around bundle of tendon fibres.

too fine, is used. One needle is passed thru the muscle from the outside toward the scleral surface about 2 or 3 mm. from one margin of the muscle and as far back from the insertion as is thought necessary to obtain the desired shortening (Fig. 12). The same needle is passed again just back of the point where it was inserted the first time, thus surrounding a bundle of fibers about one-fourth to one-third the width of the muscle with a whip stitch. In the same way, a whip stitch is passed around the corresponding

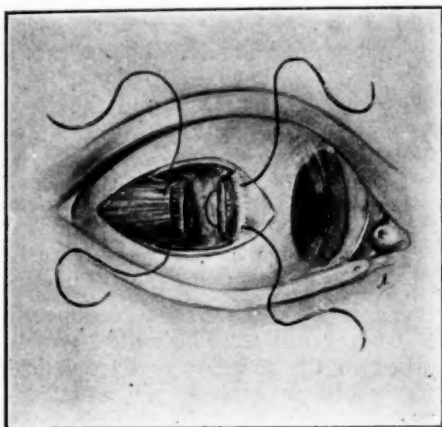


FIG. 13.

Whip stitch introduced security stitch passed through stump of tendon.

bundle of fibers along the other border of the muscle (Fig. 12). The operator now has a secure hold on the muscle, and can cut the tendon.

An alternative and better method is to seize the muscle with Prince's forceps near its insertion, and cut it off before inserting the suture. This can then be very easily done because the muscle can be held up away from the eyeball, where it is easy to get at. If the patient is told to look toward the side of the antagonist, the muscle will be relaxed, and more easily drawn up by the forceps.

It is well to leave a stump of about 1 mm. rather than cut the tendon clean off close to the sclera. This stump affords a secure hold for the forceps in fixing the globe when passing the stitches in the sclera later on.

It also affords an easy anchorage for an additional *security stitch* to hold the

muscle. This should be placed next. Use a double armed suture of silk, not too fine. It may well be of different color from the first one. Pass the needles from behind and beneath the stump forward through the insertion, one emerging 3 mm. from the upper margin, the other 3 mm. from the lower margin of the tendon; and a little nearer the cornea than the line of insertion. The loop of the suture is on the scleral surface of the tendon (Fig. 13). Next pass the needles through the muscle from the scleral surface outward about 3 mm. farther back than the whip stitch and about 3 mm. from the margin of the muscle (Fig. 14). Then pass the needles thru the conjunctiva about 2 mm. from the margin of the incision and about as far from the cornea as the insertion of the tendon. When the muscle has been pulled forward and tied in place by the first or whip stitch, this security stitch will be tied, thus binding the muscle down on the tendon stump and closing the conjunctival incision at the same time. Meantime, lay these threads one above and one below the eye on the sterile cloth with which the face and head are covered.

Next, pass the needles of the first suture, which is attached to the muscle, thru the superficial layers of the sclera near the cornea. The most satisfactory way to do this is to fix the globe with a fixation forceps, which securely grasps

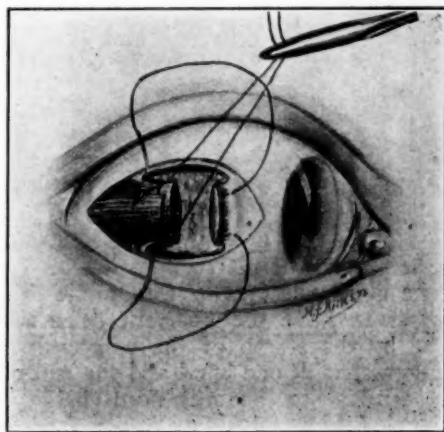


FIG. 14.

Whip stitch held aside needles of security stitch passed through muscle behind whip stitch.

the tendon stump left for that purpose. Enter the needle between the tendon insertion and the cornea, preferably nearer the cornea, where the sclera is thicker and where an accidental penetration of the eyeball would be least disastrous. Push it toward the cornea, i. e., away from the tendon, nearly parallel to the direction of the muscle fibers (Fig. 15). When the needle is pushed in this direction and the eyeball held firmly by the tendon stump, there is no tendency for

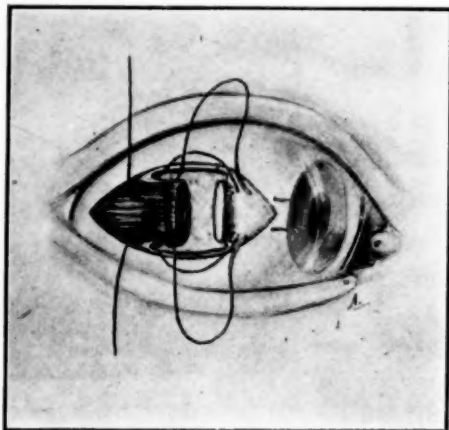


FIG. 15.

Security stitch in place. Needles of whip stitch introduced into sclera towards cornea.

the eyeball to roll around, and it is much easier to make sure that the needle goes thru a few superficial fibers of the sclera, getting a firm anchorage without going too deep; and without tearing out from not going deep enough, or from twisting, rolling movements of the eyeball. The most satisfactory place for the needles to emerge is through the conjunctiva about 1 mm. from the corneal margin, the one 2 mm. above and the other 2 mm. below the original longitudinal incision in the conjunctiva. When the suture is tied, the knot will be outside on the surface of the conjunctiva.

The most satisfactory way to tie this knot is to have the assistant seize the globe by the stump of the tenotomized antagonist with one hand and the end of the tendon to be advanced held in Prince's forceps with the other, and while rotating the globe toward the muscle to be advanced with the first hand, pull the muscle forward with the other. The

surgeon pulls gently on the ends of the suture, taking up the slack, and then more firmly until the muscle is brought as far forward as is desired, when a single knot is tied. Unlike the Reese, Verhoeff and other similar methods, it is not necessary, in order to get a surely holding suture, to pull it forward until the point where the suture is attached to the muscle is right up to the point where the suture is attached to the sclera, since the security stitch will tie the muscle down on to the sclera.

The eyes are now inspected, and if the effect is satisfactory the second half of the knot is tied firmly. If not enough effect has been produced, the assistant again grasps the muscle and the stump of the antagonist, and rotates the eye toward the muscle while pulling the muscle gently forward, while the surgeon pulls the suture more tightly. If the effect is insufficient even when the point where the stitch is fastened to the muscle is drawn close up to the point where the stitch enters the sclera, there is no use in pulling any more. The suture was not applied to the muscle far enough back, and must be done over again, a matter of a very few minutes and very little trouble when the anesthesia is satisfactory.

After the whip stitch is tied, the security stitch is tied. Usually, this suffices to close the conjunctiva. Good apposition of the edges favors prompt union and good cosmetic appearance, so

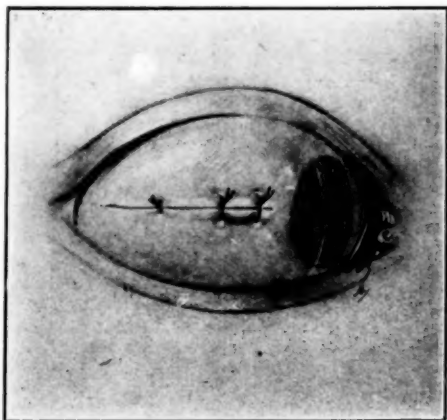


FIG. 16.

Operation completed, stitches tied. All knots on the surface.

that if necessary other conjunctival sutures should be applied. (Fig. 16.)

If necessary, the opening in the conjunctiva made in tenotomizing the antagonist should be closed with a suture. If an over effect is feared, as shown by limitation of motion, a regulating stitch may be past through the tendon of the tenotomized muscle and thru its insertion, and too free a tenotomy regulated.

Time would fail to enumerate the various alternative methods proposed and the reasons for their rejection. In some cases the choice is not easy, since the superiority of the method I have selected or devised is not sufficiently great. Thus, the Worth method makes fast to the muscle by a suture which is tied in a firm knot outside the conjunctiva. This is a well-tried, reliable method. It is rejected in favor of the whip stitch, because the latter is simpler, is entirely secure and does not include the conjunctiva.

The methods which simply pass the suture through the muscle once on each side with no knot and no whip stitch are not reliable, since the stitch so easily cuts its way along between the muscle fibers. If no strain is put on this kind of a stitch until it is tied down on the sclera or stump of tendon, as in Jackson's, Verhoeff's, Reese's and others, the hold is fairly secure. But it has been known to slip—due, no doubt, to faulty technic in tying the knot. This form of suture is added to the primary suture as a security suture in the operation here described. Virtually the same thing has been recommended by Butler, of England.

One great disadvantage of the tying-down suture of Reese, Verhoeff, Jackson, et al., is that there is virtually no latitude of adjustment in tying the suture—only in placing it. One must decide just how far back to place the suture in the muscle, and then tie the muscle down with that point closely applied to the sclera where the stitch enters that tissue. It is secure only when drawn firmly and so no adjustment is available. Sometimes a little adjustment is very desirable, but I do not wish to imply that one can expect to adjust the position of the eye during the operation even under local anesthesia, far less under narcosis, and expect the same balance to obtain a

few days later. The position depends on too delicate a nervous adjustment. This is put out of gear by the traumatism of the operation and the anesthesia.

The method of scleral anchorage advised is not the only good one, of course. It has these advantages: It is most easy to apply because the eye can be held so firmly by the tendon stump, provided the direction of the stitch is away from the tendon towards the cornea. Since the two stitches are tied in one transverse knot, the pull is divided between them and we have as strong a hold, tested by Bishop Harman's postcard method, as in the transverse stitch with the knot longitudinal.

An important consideration is the fact that so little strain is put on the tissue when the suture is being pulled up firmly in tying, since the direction of the pull by the surgeon is along the line of the thread toward the cornea, whereas when the thread passes transversely, as in many operations, the pull has to be deflected as by a pulley.

The two longitudinal stitches through the sclera afford a reliable hold even without the security stitch, provided they are well placed and well tied. The latter is added to provide for the occasional imperfectly applied stitch and to make the attachment so secure that a minimum period of bandaging will be required. It also makes unnecessary the curetting of the surfaces of muscle and sclera, or their cauterization as proposed by Maddox.

I do not approve of the French and German plan, following Landolt, of keeping the patient in bed with a binocular bandage for a week, avoiding even a look at the eyes for fear the stitches will not hold. On the other hand, I prefer at least 24 hours in bed and a day or two more with both eyes closed, the operated eye being covered for a week or ten days. The conjunctival stitch may be removed on the second or third day. The security stitch may be removed on the sixth or seventh day, the primary stitch should not be removed before the tenth day. It comes away easier the longer it is left.

REASONS WHY THIS METHOD IS AS SATISFACTORY AS ANY HERETOFORE OFFERED.

(1) Perfect anesthesia.

- (2) Hold on muscle is doubly secure.
- (3) Hold on the sclera is doubly secure.
- (4) The scleral stitch is inserted in the easiest way.
- (5) The primary stitch is adjustable, can be pulled tighter as trial shows necessary.
- (6) No special instruments required.
- (7) The security stitch secures close and effective apposition of muscle and sclera.
- (8) The security stitch stimulates plastic activity at the point where union of muscle and sclera is to take place.
- (9) The conjunctival incision closes with the best cosmetic result.
- (10) No buried stitches and no unsightly folds or lumps to mar the cosmetic result during the early weeks of convalescence, *when the patient's attention and that of his friends is most closely concentrated on the eye.*

Many operators, especially those with large experience, have already adopted some method of doing an advancement, resection or tucking which is satisfactory to them. It is not to be expected that they will abandon a well tried and satisfactory method for a new one, however much is claimed for it. Those who have not yet found a satisfactory method, and they number not a few, are urged to give this a trial, comparing it with other methods, and see if the result is not satisfactory.

SECONDARY OPTIC ATROPHY DUE TO "GASSING."

MAJOR W. E. KERSHNER, M. D.

MEDICAL RESERVE CORPS, U. S. ARMY.

Report of a case giving some of the late effects of repeated exposure to the poisonous gases that constitute one of the dangers of modern warfare.

The case reported herewith was seen in the service of Major Casey Wood, Chief of the Division of Ophthalmology at the Base Hospital, Camp Sherman, Ohio.

The remote effects of gas poisoning have been little studied in America. Such cases as are at our disposal for study are reports of foreign observers. The clear history and findings make this case of special interest because of the future bearing it will have upon ocular defects which return to us from the front.

E. L., age 23, white, American, a citizen of the United States, enlisted in the Canadian service in August, 1914. He was assigned to the 13th Battalion, Infantry. At his examination for enlistment his vision was normal in the right eye, but reduced in the left. He could read the fourth line on the chart with the left eye, he says. This, if a fact, brings the left eye vision not lower than 20/50. He attributes the reduced vision in this eye to a blow which he received

when about seven years of age. He has worn glasses from his tenth year, and denies ever having had other trouble with the eyes than a refractive error until after his second gas experience in France.

Our patient landed in France on February 25, 1916, and was immediately detailed in the bombing section of his regiment. He was sent into the front line trenches on March 2, 1916. At this time his government had not completely equipped all regiments with gas masks. March 6, 1916, he experienced his first gas attack, the effects of which were transitory and consisted of nausea and vomiting with dizziness, which lasted from ten days to two weeks. He describes the gas as a greenish cloud in both instances.

The second "gassing" occurred on May 22, 1916, at about dusk, at which time it was impossible to see the approach of the gas and take such measures as they could to prevent its full effects. The concentration was probably not great, as

the case history shows. The first effects noticeable were irritation of the throat with shortness of breath, not severe. The worst immediate effect was the inability to see clearly. "It seemed like a dense haze was about every object," he says. There was also nausea most of the time, with a sensation of floating, shortness of breath, and a smothering sensation which was not constant. During this stage he was taken to the dressing station, where consciousness was lost. This at about 7:30 p. m.

Consciousness was regained between three and four hours later in the Field Hospital, at which time a splitting headache was the most notable symptom. This was accompanied by severe pain and aching of the left arm and leg, which were very weak. It was possible to move them, only after great effort, but there was no strength in the muscular move-

ments. Movement was accompanied by pain for the first weeks. This condition of the left side gradually and very slowly improved until he was able to discard his cane in May, 1917. I may here add that there are no evidences of weakness on the left side at present. Upon regaining consciousness, he was only able to distinguish light from darkness. This condition lasted about seven weeks, by which time objects had become discernible, and in another three weeks vision in the right eye had improved to about what we find it. The left eye failed to improve beyond the ability to discern objects. In this condition he was returned to Canada, discharged from the service, and returned to his home in the States, only to be picked up by the draft.

We find at present the following clinical history. He entered the Base Hospital complaining of left frontal and tem-

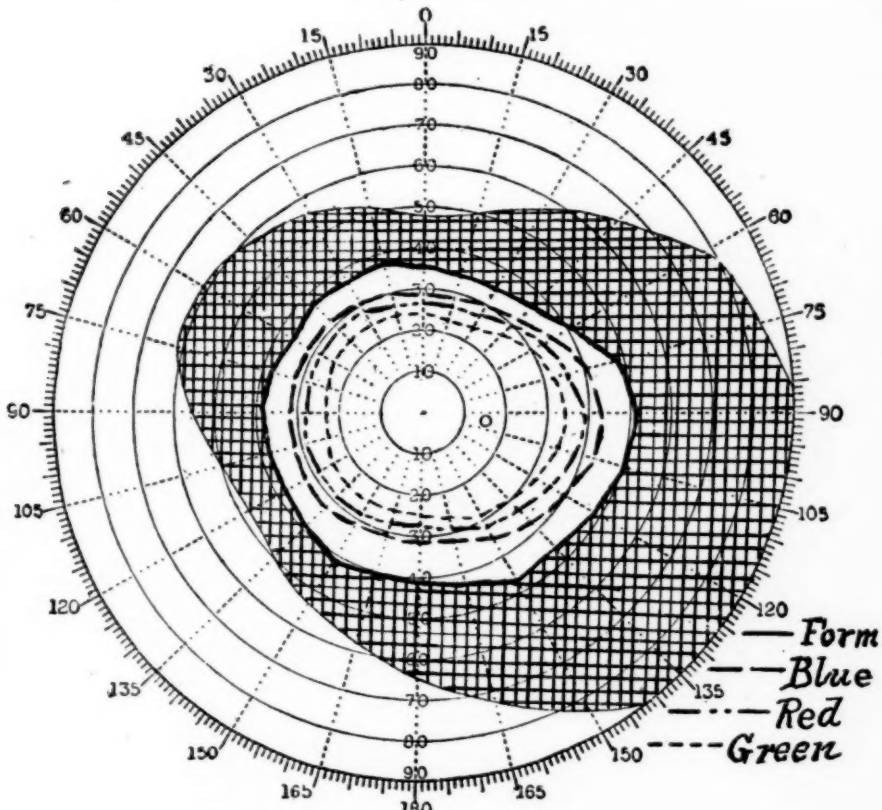


FIG. 1.

Field of Vision for right eye in case of gassing, showing contraction for both form and color fields. (Kershner.)

poral headaches which are more marked in hot or damp weather.

Family history is negative. His father and a brother are in the Canadian army at present. Personal history: Illnesses of childhood only, and slight attacks of rheumatism in damp cold weather, with some stiffening of the joints, probably due to an old gonorrhea of some years standing, which had bothered him a little before the exposure incident to his service in France. Personal history otherwise negative.

Physical examination was reported negative by the medical service. Ear, nose and throat examination reported negative by that department. Examination of the ethmoid cells was made with special care. The emunctories are normal.

Returning to the ocular condition, we find the conjunctiva normal, cornea clear, irides blue, react to light, accommodation and convergence promptly. Reaction to light directed into left pupil somewhat less pronounced than when directed into the right. Ocular movements normal in all directions. Vision, right eye, 20/40, left eye, hand movements at 50 cm. The right eye with a plus 1.75 D. sphere gives 20/30 vision. It is not possible to improve the vision of the left eye.

The field of vision for the right eye, as indicated on the accompanying chart, revealed contraction for form as well as for colors (blue, red and green), with a very slight enlargement of the "blind" spot. It is not possible to get any type of field for the left eye.

Ocular efforts are followed now by marked distress of the right eye with photophobia and blepharospasm.

Ophthalmoscopic examination: Right eye, media, clear, disc oval, axis 75°, marked pigment ring to the nasal side of disc, scleral ring pronounced to the temporal side, with secondary pigment

areas up and to the temporal side, two veins width from the scleral ring. Physiologic excavation of normal size, but seemed partly filled with a transparent substance or tissue. The whole disc is pale. Refraction of the disc plus 2.50 D., that of the superior and inferior temporal arteries, taken three disc diameters from the disc, is plus 1.50 D. Macula normal. Periphery of fundus normal.

Left eye, media clear, disc oval axis 105°, marked pigmentation in area about the whole disc which is very pale, with a shallow physiologic cup. The nerve head is very prominent with an evident striated new tissue formation. Refraction of the nerve head is plus 5.50 D. while that of the superior and inferior temporal arteries three disc diameters distant from the disc is plus 4.00 D. The atrophy is more marked in the left than in the right eye. Macula normal. There are a few cholestrin deposits in the retina down and out from the macula. Periphery normal.

Whether secondary optic atrophy follows neuritis, extending to the optic nerve from a gas ethmoiditis, as Finch suggests (*Lancet*, Nov. 6, 1915), is purely speculative. As yet we have too little data upon which to venture an opinion. The effects of "gassing" may prove more far reaching than we expect, extending even to the brain tissue, and affecting the nervous stability and mentality of the subjects.

One thing is sure. Our case presents evidence of neuritis, and that traceable directly to gas. Whether that neuritis was caused by the effects of the gas upon the vaso-motor system, whether it was due to direct blood changes, or whether it gained entrance thru the naso-pharyngeal area is of less importance than the actual results; which we will have to face if degeneration of the visual apparatus proves a common end result of gas toxemia.

LATENT NYSTAGMUS.

MAX W. JACOBS, M. D.

ST. LOUIS, MO.

Report of a case of this unusual form of nystagmus, with account of some of the explanations offered for it. Read before the American Academy of Ophthalmology and Oto-Laryngology, October 29, 1917.

During the past 45 years occasional cases of nystagmus have been reported which are characterized by the fact that the essential eye phenomenon appears only when one eye is covered or binocular vision interfered with. The eyes of some of these patients did show occasional nystagmoid movements with both open, but in such the nystagmus was intensified by covering one of them. Fromaget has suggested calling this condition Latent Nystagmus, because of its analogy to latent strabismus. Dorff,¹ in 1914, described several cases which come in this category, and has reviewed the literature up to that time. With the newer methods of ear examination, doubtless some of the earlier reported cases could have been excluded from this classification, but the more recently examined patients have enjoyed the benefits of such newer methods, and are reported as otologically negative. Disturbances of motility, especially convergent strabismus, are frequent in these cases, and not rarely some form of nystagmus has been found in the ascendents and descendents.

My patient is a boy of 14 years, who consulted an oculist because of occasional poor vision when reading.

Ophthalmometer shows astigmatism, R. and L. + 0.50 D. axis 90°.

Vision: R. 18/70 to 18/40.

L. 18/200 to 18/100.

Binocular 18/20 +.

There is no strabismus. The patient has been seen repeatedly, and occasionally nystagmoid movements have been detected with both eyes uncovered. But on the other hand there have been visits to the oculist during which the boy was subjected to repeated examinations and during which such movements have been absent. On covering either eye marked horizontal nystagmus occurs. The ex-

cursions are of equal length and duration. The phenomenon is most marked in the left eye and both eyes almost immediately become quiet again when the obstruction is taken away. Retinoscopy after using homatropin shows one diopter of hypermetropia with no astigmatism. With the corresponding correction there is, of course, practically no change in vision. General examination and a blood Wassermann are negative. The otologist after making labyrinthine tests, reports the ears normal and the eyegrounds show no abnormalities.

As Dorff has stated, it is assumed today that there is a supranuclear tonic association center, which controls the ocular movements associated with binocular seeing. The center must be connected with the cortex, cerebellum, vestibular apparatus and nuclei of the eye muscles. Coppez,² one of the investigators along this line, assumes that there is a rhythmic or clonic center from which arise nystagmoid movements. This clonic center is ordinarily controlled by the tonic center. In my patient, as in the first case described by Dorff, no peripheral cause for the disturbance in equilibrium could be found; and I believe we can assume that we are dealing with an underdeveloped tonic association center which does not sufficiently inhibit the clonic center.

Fromaget³ tried to explain latent nystagmus on the theory that the tonic center which controls normally all eye movements requires the stimulation of both retinæ to retain control over the antagonistic clonic center. My observations make me side with Dorff, who pointed out that interference with the vision of one eye by means of a strong convex lens did not prevent the appearance of nystagmus. Both retinas were subjected in this experiment to a light stimulus and yet the nystagmus ap-

peared. I have frequently held a screen in front of one eye of my patient in such a way that a reasonable amount of light was admitted to that eye (the other eye fixing). The horizontal nystagmus appeared immediately. These facts, it seems to me, make more tenable the suggestion of Dorff that in these patients, most of whom are strabismic, some fusion stimulus is still transmitted to the tonic association center and tends to maintain equilibrium. The placing of an obstruction before either eye, even if it does not cut off all light, interferes with even this minimal fusion; and the tonic loses control of the clonic center. This theory receives even stronger support in my case, since the boy does not squint.

It has been suggested that we can be of service to these patients, particularly when we see them during childhood, by advising against occupations which require monocular vision. One of Dorff's

patients noted his affliction when he first tried to fire a gun. As soon as he closed one eye to aim, the target became indistinct. Another patient was suddenly given work to do which required monocular vision for the greater part, and found that she was unable to see objects clearly under such conditions. Operations for strabismus have been of cosmetic value only. Stereoscopic exercises to strengthen binocular fixation have been suggested by Fromaget, for those who still retain good binocular vision. The loss of an eye in one of these patients would bring up the question whether greater damages should be assessed than after enucleation in a patient not suffering from this anomaly.

The entire subject is still largely theoretical, and the solution of its problem depends on our acquiring a better knowledge of the centers which control motility.

BIBLIOGRAPHY

1. H. Dorff. *Klinische Monatsblätter f. Augenheilk.* October-December, 1914.
2. Coppez, H. *Société Française d'Ophthalmologie*, 1913, p. 1.
3. Fromaget, C. and H. *Annales d'Oculistique*, v. 147, p. 344.

CONGENITAL PARALYSIS OF THE EXTERNAL RECTUS MUSCLE.

BY WILLIAM H. CRISP, M. D., OPH. D.

DENVER, COLORADO.

A review of the literature of congenital palsies of the ocular muscles with report of two new cases. Read before the Third Colorado Ophthalmological Congress, August 9, 1917. With discussion and bibliography.

Congenital paralysis of one or more of the muscles of the facial region, while not perhaps to be regarded as among the common congenital defects or anomalies, has been made the subject of fairly frequent reports in the literature. According to Lennon,¹ who in 1910 reviewed the subject from the point of view of the neurologist, presenting also records of three personal cases, the literature of the past thirty years contained less than fifty instances of congenital oculo-facial defects. All three of Lennon's cases had defects in the muscles of the face and of the eyes at birth. Other anomalies

were present, including club foot, and a deformity of the ear.

As regards the eye, the musculo-nervous defect which has probably been most frequently observed and reported is that of congenital ophthalmoplegia. Writing in 1910, Webber² had been able to find seventy-four cases of this condition in a survey of the literature for thirty years. Of these seventy-four cases, forty-five were in males and twenty-seven in females, the sex in two other cases not being stated.

As with many other congenital defects, congenital ophthalmoplegia shows a

marked disposition to be a family and frequently a hereditary disease. Out of the seventy-four cases collected by Weber, thirty-three belonged to only nine families, the condition sometimes running thru three generations. Cooper,³ on investigating the case of a young man who came to him with this condition, found that a great-grandfather, a great uncle, a grandfather, an uncle, the father, and a brother had been or were similarly affected. Of this family no female member had shown the condition, and in every instance the trouble had existed from birth. The eyeballs were immovable, and there was also more or less complete paralysis of the elevator of the upper lid.

In some of the cases reported a number of the extrinsic eye muscles have been involved at the same time, while other muscles have more or less completely escaped. This was the situation in three cases reported by Gebb and Voss.⁴ In the first, the following muscles were completely paralyzed: on the right side the elevator of the upper lid, both obliques, and the internal and superior recti; on the left side the superior oblique, and the superior and inferior recti. The preserved muscles were on the right the abducens and the inferior rectus, and on the left the elevator of the upper lid, the abducens, the internal rectus, and the inferior oblique. In the second case the paralyzed right muscles were the elevator of the upper lid, the abducens, the inferior oblique, the superior and inferior recti: the left paralyzed muscles were the three recti and the inferior oblique. The preserved muscles were on the right the superior oblique and the inferior rectus, on the left the abducens, the inferior oblique and the elevator of the upper lid. In the third case the elevator of the upper lid, the abducens, both obliques, and the superior rectus were paralyzed on the right side; and on the left side the superior and inferior recti and the inferior oblique. On the right side the internal rectus, and on the left side the abducens and the superior oblique were incompletely paralyzed. The sound muscles were on the right the inferior rectus, and on the left the eleva-

tor of the upper lid and the internal rectus.

In a fair number of cases the paralysis has involved an individual muscle alone. This individual muscle has usually been the external rectus, but a few cases have been recorded in which an individual of the group of muscles supplied by the common motor oculi has been the one affected. For example, Mittendorf⁵ and McDannald⁶ both report cases in which there was apparently complete absence of the inferior rectus. In the two cases reported by von Imre⁷ the muscles involved were the elevators of the upper lids and the superior recti, all of which were completely paralyzed, and the internal recti, which were weak.

As regards the anatomic foundation for the paralysis, differences of opinion have been expressed. It may be that these varying opinions are not contradictory, but correspond each to the actual state of affairs in individual cases. Möbius,⁸ writing in 1892, concluded that congenital oculo-facial muscle defects were due to what he called "Kernschwund," that is a disappearance of the nucleus. This view has, however, been strongly opposed by other authors, notably Kuhn,⁹ who argues that a primary muscular aplasia is the cause of the condition. However this may be, definite absence of the muscle itself has apparently been clearly demonstrated in a number of cases. Statements to this effect have been made by Schenkl,¹⁰ Mittendorf,⁵ Coover,¹¹ and others. In some cases the muscle has been found to have been replaced by a fibrous band.

The first report of a case which had been studied from the point of view of the presence or absence of the nucleus was by Heubner,¹² in 1900. The patient was two years of age, and had from birth a paralysis of the external eye muscles, a paralysis of the face well marked on the right and less marked on the left side, and an atrophy of the left anterior half of the tongue. Histologic examination showed complete absence of the cells of the abducens nuclei. The facial and hypoglossal nuclei on the left side were practically absent, and on the right side the facial nucleus was represented by a diminished number of normal cells. The

nerve roots were very small or absent. As bearing on the general question, Lennon quoted the experience of Oversteiner. This investigator found intact anterior horn cells in the cord of a man who had lacked from birth most of the lower muscles of the right shoulder girdle and of the right side of the neck. Reference is further made by Lennon to the fact that Ziehen demonstrated a patient in whom a defect of one of the large body muscles coexisted with ocular and facial defects. Similar cases had been reported by Schmidt and Israel. From the presence in two of his own cases of other defects of mesodermic origin, Lennon argues that in them the ocular defects were rather of mesodermic or muscular origin than of ectodermic or nuclear. In Mittendorf's and Coover's cases the absence of the muscle was seemingly clearly shown at operation.

In an exhaustive paper on the general subject of congenital muscular defects, Abromeit¹⁶ classifies as follows the varying conceptions of the anatomic nature of these defects in different patients: (1) those cases in which no embryologic foundation for the muscle ever existed, so that it is not represented by any tissue whatever; and (2) those in which the muscle was laid down, but underwent degeneration during the embryonic period, because the normal connection with the nerve or central organ was never established, these cases presenting remains of their earlier independent existence in the form of tendinous and fatty tissue. The second group may owe the failure of trophic influence on the part of the central organ or nerve either to a mere lack of union of the nerve with the muscle, to lack of development of the nerve, or to defective development of the cells of the anterior horn or nucleus as the case may be.

Lundsgaard¹³ saw total paralysis of the external rectus in five children, four of whom were unchanged at the time of report, while in the fifth case the condition had recovered completely in a week or so. These cases were all encountered during prevalence of epidemic poliomyelitis, and had developed after a few days of mild febrile illness.

In a number of instances paralysis of the external rectus muscle has coexisted with retraction movements of the eye upon contraction of one of the active muscles. These retraction movements occur upon attempting to turn the defective eye inward, and are sometimes combined with movement of the eye upward or downward. According to Türk, as quoted by Salus,¹⁴ the more common form of retraction is that due to fixation of the globe on the temporal side, the external muscle in these cases being replaced by a rigid fibrous band, which contains few or no muscular elements. The actual existence of this condition is said to have been first demonstrated by Inouye.¹⁵ In other instances the retraction is said to be due to an abnormal attachment of the internal rectus muscle, usually far back on the eyeball.

In a case reported by Griscom,¹⁷ in which the left external rectus was paralyzed or absent, the left eye, when the patient attempted to look to the right, did not perform the normal movement of abduction, but turned sharply and directly upward, there being at the time a retraction movement of the eyeball and narrowing of the palpebral fissure. This peculiarity has been reviewed by Duane.¹⁸ Two similar cases were reported by Tyson.¹⁹ In one the left eye could not be carried beyond the median line, while upon abduction the left eye receded into the orbit, and the lids partially closed. In the second case the behavior of the eye was similar, there being in addition a slight tendency of the eye to turn upward.

Except in combination with defects of other facial muscles, I have not read of a case in which congenital paralysis of the abducens was bilateral. In the recorded cases, the eye on the affected side has commonly possessed good vision, at least with correction. In the case reported by Harris,²⁰ however, the left eye, the one affected, had been amblyopic as long as the patient could remember.

Experience as to the existence of binocular vision or diplopia in these patients seems to vary with individual observers. Thus Brown,²¹ dealing with that class of cases in which paralysis of the exter-

nal rectus is associated with retraction movements of the eyeball, states that in the primary position binocular single vision is the rule, but that diplopia is present when the patient is called upon to look toward the affected side. In one of Tyson's¹⁹ cases diplopia had been noticed for a year and a half. In a case reported by Sattler,²² in which the patient had had a tenotomy of the internal rectus at the age of thirteen years, a double vision was stated to have been present throughout the life of the patient, who was then twenty-one years old. On the other hand, in my own two cases neither patient had ever been troubled with double vision.

As regards the treatment of congenital paralysis of the external rectus, a number of authors have discussed the advisability of substituting for the missing muscle portions of the superior and inferior recti. In a few cases such an operation has actually been performed with fairly satisfactory results. Thus, in the case reported by Harris,²⁰ that of a young woman of seventeen years in whose left eye the paralyzed muscle appeared as a flabby, pale, thin band, the temporal half of the tendon of each of the vertical muscles was severed from its attachment and split backward for at least a half inch, and then sutured with black silk to the site of insertion of the external rectus. A complete tenotomy of the internal rectus was also done by Harris at the same time. Practically full temporal rotation is said to have been obtained in the affected eye, although there developed a slight deviation of the eye upward and inward in the primary position.

A similar operation was performed by McDannald⁶ in the case of absence of the inferior rectus which he reports; the superior rectus being tenotomized, and the external and internal recti being split and their lower portions reattached to the eyeball below. In the case of absence of the inferior rectus reported by Mitten-dorf,⁵ the left eye was turned so completely upwards that a rather different operation was found necessary. After cutting the tendon of the superior rectus, the lower portion of both the external and internal recti was fastened by means

of a long suture to the lower orbital margin, by carrying the needle from the inner surface of the tendon under the conjunctiva and thru the periosteum of the orbital margin and piercing the skin so as to bring the suture out on the cheek, where it was tied to a second suture having a similar course.

It is doubtful whether in the majority of cases of congenital paralysis of the ocular muscles any appreciable benefit is to be expected from surgical intervention. This may be, as Verderame²³ remarks, because the defect of motility is not always striking, because the patient is not disturbed by diplopia, or because he has habituated himself to eliminate or at least to diminish the disturbance inherent in such affections. Moreover, adds Verderame, in some cases of this kind in which operation was performed, it was followed by the appearance of more or less marked disturbances, due to false projection or to diplopia.

CASE 1.—My first patient was a woman of twenty-three years, who had come for correction of squint. The history indicated that since birth the right eye had been incapable of outward rotation, altho always regarded as the better eye. This eye had 0.75 D. of hyperopic astigmatism, and the left eye 4.50 D. With correction each eye had vision of 5/7.5. The right eye could not be brought out beyond the median line, altho the movements were otherwise normal. There was distinct flattening of this eye at the normal site of insertion of the external rectus.

CASE 2.—The second patient was a boy of eleven years, whose left eye had turned in since birth, altho it fixed perfectly and had normal vision. The limitation of movement of this eye corresponded precisely to that of the right eye in the first patient, but there was no flattening of the globe. Neither patient, as already stated, had ever been troubled with diplopia. In the boy some cosmetic improvement was got from tenotomy of the left internus, and the possibility of transplantation of a part of the superior and inferior recti to the normal position of insertion of the externus was suggested as regards both patients, but the suggestion was not accepted by or for

either one. In discussing these two cases when they were presented a year or two ago before the Colorado Ophthalmological Society, Dr. Edward Jackson said that there had been no complaint of diplopia in any case he had seen, nor had he been able to develop diplopia in either of three personal cases.

DISCUSSION.

Harold Gifford, Omaha, Nebraska, had given some attention to the subject for the past thirty years, as it was about thirty years ago that he had seen the first case. He had personally seen twenty-nine cases of this condition. It was not more commonly reported, because people as a rule did not complain of the trouble. The deformity was very slight. These patients were not able to turn their eyes out, but this did not bother them because they were able to turn them in all right. If we watched all our patients carefully we should find more of these cases. The subject of etiology was what Dr. Gifford had been working on. He noticed that there were more girls than boys and more left than right eyes in which the condition showed. There were something like seventy-five percent of the cases in the left eye, and about sixty percent of

them were in girls. This made him suspect that this might be a birth injury. Hofnagel had reported some cases and had suggested that the condition was due to injury to the left side of the orbit as the head passed under the promontory. Gauss also proposed the same theory at some society meeting. The trouble with this theory was that in Dr. Gifford's cases he had only had one case in which there was any evidence of a birth injury. And yet there was almost the exact proportion between the number of cases of this muscular condition which were on the left side, and of cases of left occipito-anterior position. It was easy to see how a condition of this kind could be overlooked in the confusion at the baby's birth. Dr. Gifford had seen two bilateral cases. But one of these was complicated. In his first half-dozen cases he had not noticed the retraction which subsequently proved to exist in a number of cases. He had done an advancement with fairly good results in some cases.

As regards the occurrence in girls, that was not explained by the presentation at birth. But girls notice much more keenly any slight defect than do boys, and so also do their mothers. When boys have it it is nearly always in the right eye. Boys are likely to notice anything with the right eye more than girls.

BIBLIOGRAPHY.

1. Lennon, M. B. *California State Med. Jour.*, 1910, viii, 115.
2. Webber, F. P. *Boston Med. and Surg. Jour.*, 1910, cxliii, 721.
3. Cooper, H. *Brit. Med. Jour.*, 1910, 1, 917.
4. Gebb, H., and Voss. *Berl. kl. Woch.* 1910, xlvii, 961.
5. Mittendorf, A. D. *Manhattan Eye, Ear, Throat Hosp. Rep.*, 1914, xv, 118.
6. McDannald. *Arch. of Ophth.*, 1914, xliii, 515.
7. Von Imre, J., Jr. *Zeit. f. Augenh.*, 1913, xxx, 556.
8. Möbius. *Münch. med. Woch.*, 1888, xxxv, 91.
9. Kuhn. Quoted by Lennon, *California State Med. Jour.*, 1910, viii, 116.
10. Schenkl, R. *Centrlbl. für prakt. Augenheilk.*, Leipzig, 1881, vii, 335.
11. Coover. Discussion of Crisp's cases. *Annals of Ophth.*, 1914, xxiii, 587.
12. Heubner. Quoted by Lennon, *California State Medical Journal*, 1910, viii, 116.
13. Lundsgaard. *Ugeskrift f. Læger*. No. 47, 1912.
14. Salus, R. *Arch. of Ophth.* 1913, xlii, 34.
15. Inouye. *Ophthalmol. Klinik*. 1900, p. 285.
16. Abromeit. *Monat. für Psychiat. und Neurol.*, 1909, xxv, 440.
17. Griscom, J. M. *Coll. Phys. Phila.*, 1915, xxxvii, 415.
18. Duane. *N. Y. Med. Jour.*, 1914, xcix, 409.
19. Tyson, H. H. *Arch. of Ophth.*, 1915, xlv, 197.
20. Harris, C. M. *Penn. Med. Jour.*, 1916, xix, 495.
21. Brown, S. H. *Ann. of Ophth.*, 1910, xix, 464.
22. Sattler, C. H. *Arch. f. Augenh.*, 1910, lxvii, 206.
23. Verderame, F. *Annali di Ottalm.*, xlv, 779.

OPERATION FOR EXTRACTION OF LENSES FULLY DISLOCATED INTO THE VITREOUS.

HOWARD S. PAINE, M. D.

GLENS FALLS, N. Y.

This paper points out the discouraging statements with regard to operation on these cases in the current literature, and the need for improved methods. It describes the method its author has devised and gives the results obtained by it, illustrated by reports of cases.

The Paine operation for Dislocated Lenses is original in furnishing thorough illumination of the interior of the eye. As a result of this illumination, there are three advantages: First, The operator can see clearly the instruments and the hinged or floating lens, during the entire operation. Second, The operator is enabled to use delicate instruments with precision. Third, It permits the operation at once, upon making the diagnosis, when further damage to the eye may be prevented.

The removal of a subluxated lens, one hanging by a hinge so that it swings or floats up into the pupil after an incision has been made, is comparatively easy of accomplishment. But when the lens hangs deep in the eye by a hinge, and is situated so far down and back that it refuses to float into the pupil when the incision is completed, or if it is entirely loose (fully dislocated), and lost into the inky depths of the vitreous, the difficulties are increased to the heretofore realm of the "impossible." In these desperate cases what do the authorities advise us to do?

In my earlier article, I quoted from a score of our ablest writers and operators. Some advised closing and bandaging the eye; some advised reopening the eye later if the lens became visible again, while Fuchs¹⁵ stated that "the extraction of a lens floating in the vitreous is impossible." None of the great writers and operators minimize the dangers of operating for lenses hinged and hanging low down or entirely lost and floating about in the depths of the vitreous. No less an authority than Lt. Col. Smith in a letter to me writes:

"To do this case" (lens hinged and hanging low down), "you require a first

class assistant and to be a first class operator by the intracapsular method.—The capsulotomy school, of which Prof. Fuchs is an exponent, are quite right to avoid such cases."

If we turn to the American Encyclopedia of Ophthalmology² we find, where lenses have been dislocated during an operation, the following advice: "The lens may be dislocated during an extraction, especially in cases of fluid vitreous. Should this occur, it is usually best to wait awhile, and if the lens does not reappear in the pupillary space, to close the eye and apply a dressing. It is said that the cataract will sooner or later reappear in the pupillary space and may then be extracted" by reopening the wound and trying again. Török and Grout³ and others, advise this plan.

In the main text of Fuchs⁵ we find, in speaking of hinged or subluxated lenses, the following: "In cases in which the removal of the lens is difficult or impossible, all we can do is to combat the inflammation or the increase in tension, by means of an iridectomy." Also in the main text of Ball,⁶ is: "An old dislocation with fluid vitreous humor, offers little encouragement,—if it is situated in the vitreous chamber, attempts to remove it are not justifiable, unless its position can be changed," i. e., caused to move into the anterior chamber. Beard⁴ says "if the cataract must be 'fished' for—the depths of the vitreous dragged as it were—then a delicate wire loop would be the safer instrument to employ."

The present article has not been written to criticize our great operators and writers, but to try to fully and clearly explain to those who want to know, what to do and how to do it, and have found no

help from the books. I believe if I, dependent on my own initiative, without skilled assistants, who had at that time only once removed a lens in its capsule, who had never seen Smith's intracapsular operation performed, could remove five dislocated lenses successfully, that the operation should be, and can be done by many others.

ILLUMINATION.

The first step in the Paine operation is complete illumination of the interior of the eye during the entire operation after the incision has been made. In all the textbooks except those that have abstracted my former article, not one advises or suggests illumination of the interior of the eye while removing a lost lens. *This point is vital.* That this great essential in the operation had heretofore been overlooked, and that writers and operators were groping in the dark and complicating the operation to the destruction of these eyes, is well illustrated by the following sample quotation: "On making our incision, if the lens does not present, it is inadvisable to attempt any manipulation for its removal, and there is little to be gained by attempting to extract an *invisible lens*." Gruening.⁷

How sadly illumination is needed in the great world clinics is evident from the testimony of Dr. Meding at Saratoga,⁸ "Even where lenses have slipped into the vitreous during intracapsular operation, it is not easy and seldom safe, to follow them up. The speaker has seen the world's best operators at their wits' ends in the attempt. In Vienna, Berlin, Paris, London, Madras, Bombay, Amritsar and Tokio, he has watched, assisted and operated, and is yet far from being able to propose a method applicable to two consecutive cases. He always advises great caution and to the less experienced 'hands off'." The above advice should be heeded by all who attempt the extraction of lenses that are not in plain sight. This paper has been written to show how the interior of the eye can be illuminated, the lens made visible in any part of the globe, and extraction become a comparatively simple matter.

All that is required for the illumination of the interior of an aphakic eye is

a white, ground glass, frosted, electric light bulb with corkscrew filament, of about 20 candle power, attached to a handle convenient to hold when and where required, generally about two feet from the eye to be operated on. The light should not be bright enough to make the patient wince and fight it. A magnifier with a three-inch focus will illuminate an aphakic eye so that one can look into its depths with ease when the pupil is dilated, and especially after the incision has let the aqueous escape when the iris hangs down giving a pupil enlarged clear to the limbus. A broad eye shade worn by the operator is a help. After the incision has been made, the operator, by sitting back of the patient's head, can easily look down from above to the very bottom of the illuminated eye. I have usually worn spectacles stronger than for my daily use, to magnify at a shorter distance. Dr. Wendell Reber⁹ recommended "as an operating glass, a sphere with a plus four degree prism, base in, which gives a very delightful field at eight to ten inches."

THE OPERATION.

The patient should be in a darkened room on an operating table. Cocain and adrenalin should be instilled. Dr. Reber advises when patients are operated on under local anesthetic, the giving "three hours before the operation, twenty grains of bromid and ten grains of chloral; two hours before the operation another dose exactly the same; one hour before the operation 1/6 grain of morphin and 1/150 of atropin."

I have made the incision giving a long conjunctival flap, and in one instance inserted a stitch as a precaution against gaping. Dr. Smith of India in a letter to me said, "If possible then do an iridectomy." Dr. Elmer Bissell, calling attention to the danger of hemorrhage after an iridectomy, suggested the advisability of removing the lens first. Dr. Edgar S. Thomson¹¹ in the Saratoga Meeting said that "in the course of healing, the vitreous retracts into the eyeball, dragging with it the iris, which is folded back on itself so that the prolapse of the iris into the wound is very unlikely to occur." If such is the case, it would

seem as though an iridectomy might be omitted; but I have performed an iridectomy in every case. It can be done after the lens is out, if there is fear of hemorrhage. When the free border of the iris hangs low down it can be reached by a blunt hook, or a very delicate Fuchs iris forceps, by passing one blade a little below the pupillary border.

All authors agree that lenses dislocated into the anterior chamber cause certain destruction of vision and should be extracted. As these lenses frequently fall through the pupil into the vitreous during an operation for their removal, I should advise always having in readiness the necessary means for the illumination of the interior and the instruments for extracting a lost lens. It is most unfortunate and embarrassing to be guided by Meller,¹⁷ who says "any attempt to recover it is useless and results only in further injury to the eye" and then to have to quietly close an eye, leave the lens in the vitreous, and poultice one's wounded pride by thinking of what failures other operators have made.

Lenses in the vitreous are either hinged or entirely loose. These hinged (semi-luxated) lenses, for the purpose of this article I will divide into two classes. First, those that float into the pupil after the incision has been made, and those that do not. Of the first class I can do no better than to quote from a letter from Col. Smith to me, and his book,¹² which says, "my experience in extracting such lenses" (he refers to lenses 'couched' by the native rawals or doctors), "when they float up behind the pupil is extensive. * * * * Once the incision is made they float up tight against the pupil, * * * * they are then quite readily extracted."

The second variety of hinged lenses hang so low down that after the incision has been made, the forward movement of the contents of the globe does not sweep them into the pupil. It is for precisely this kind and those "lost" that the Paine method is best adapted. In the first case, with the incision completed, the interior illuminated, and the lens hanging low down in the vitreous by a hinge, the simplest procedure is to pass a Stevens traction hook to the lowest

border of the lens, lifting or drawing it into the pupil, then slipping a Smith spatula behind it and sliding it up and out on the spatula by traction on the hook if it holds, or gentle pressure on the outside of the cornea, if the hook pulls out. With such a delicate instrument passed with precision into the illuminated vitreous, the crystalline can be easily and gently lifted into the pupil with little if any more displacing effect than the original passage of the lens through the vitreous. We should bear in mind that the gravity of a lens is so near that of the vitreous that the lightest touch will lift it, also that in these cases if the lens has been loose any length of time the vitreous has become fluid.

How much this operation, with thorough illumination and precision in the use of delicate instruments, differs from the usual methods can best be shown by referring to the American Encyclopedia of Ophthalmology,¹³ where the whole gamut of operations and methods is explained. One is told how to endeavor to get dislocated lenses into the anterior chamber by turning the patient on his face, fix the lenses with needles and keratomes, push them forward with bidents, etc.

Dr. Reber⁹ advocated the Ziegler vectis, a loop with teeth, for removing lost lenses, as follows: "It is an easy matter to slip it back of the lens, and once you get any grip at all on the lens it is like the barb on the fish-hook; the lens can't get away." Yet he adds, "The other case occupied the best part of three-fourths of an hour and we finally turned the patient on his side, to rotate the lens in such a position that we could get at it—I almost had to stand on my head to finally engage the lens.—The final vision was about 5/60."

The resumé of the American Encyclopedia of Ophthalmology concludes with what the editor of this section tells us is best, as follows: "Knapp's method is probably the best procedure for totally luxated lenses, free in the vitreous. As a rule, pressure on the lower eyelid over the sclera, with counter pressure by means of the upper lid, will bring success in most cases, and without great loss of vitreous. * * * Loss of vitreous

should be met by injecting into the eye (to fill up the globe), a sufficiency of normal salt solution." As Beard¹⁰ has most graphically described the possibilities of this method I quote from him as follows, under the head of "The sinking of the cataract into the vitreous during extraction." "When met, the operator must be prompt to act or all is lost. I have seen one of the most skilled and tactful ophthalmic surgeons the world has ever produced, fail utterly to deliver such a recalcitrant lens, and have seen others, almost as proficient, reduce the globe to a hopeless wreck when confronted with the accident. One of them placed the left thumb behind the incision and the right beneath the cornea and then approximated them, expelling cataract, vitreous body and all." If the field is not obscured by a large amount of blood, a lens lost during extraction should be removed at once and with little difficulty. It would be an unpleasant complication to be sure, but under ordinary conditions should not be serious with a good light, traction hook and spatula. A fine Stevens traction hook used with illumination, produces no trauma, does not stir up the vitreous, absolutely controls the lens, and it is not only easy and safe to follow up lenses lost during intracapsular operations, but to me seems criminal not to do so. On the contrary any loop or spoon used in the dark would naturally have to push the lens against the interior wall of an eye to get a grip on it and necessarily churn up the vitreous, detach the retina, and do other damage while scraping its way out.

The speculum I have found most suitable, is that used at the Moorfield's Hospital, London, with a very long shank fitting close to the temple. With this the lids can be raised by an assistant without getting in the way and light. This speculum can be obtained of Meyrowitz of New York. It is known as Knapp's speculum, as Dr. Knapp brought the pattern to this country. I prefer the modification with a hinge in each branch. By having the lids raised gently by the branches after the incision is made, I have thus far escaped loss of vitreous. It is even more important to keep all pressure of the lids from the eyeball dur-

ing this operation than in the intracapsular extraction.

The only hook I found suitable was a Stevens traction hook which is made by Meyrowitz also, and comes in the Stevens set of instruments for operating on the external muscles of the eye. It has a delicate shaft with a hook perhaps one-sixteenth of an inch long, turning at about 45 degrees backward, and as fine as a needle. The ordinary Tyrrell hook is less suitable because the shank is so near in line with the point (so much like a button hook), that the point would be prevented from catching the lens easily.

OPERATE AT ONCE.

This final essential is of vital importance. All authorities agree that a lens once dislocated is to all intents and purposes, a foreign body, acts as an irritant, and causes trouble sooner or later. Smith¹⁴ says that the length of useful day vision in eyes where the lenses have been "couched" most successfully, is four years; hence the brightest outlook for such cases is dark. Every minute that a dislocated lens remains in an eye it is tending toward a more serious condition. A pathologic eye is more difficult to operate upon and offers less encouragement for the future sight of the patient. We should avoid delay which brings in its train certain destruction. We owe it to our patients to save their sight. Some eyes do tolerate lenses floating in the vitreous a long time, but they are not the rule. Knowing this, shall we do nothing and see these eyes steadily traveling the via mortis?

I would call attention to, and thoughtful consideration of the second eye of Miss L. and both eyes of Mrs. C. H. T. (Cases 2, 4 and 5.) Kindly note the stage they had reached. It took some months to recover lost ground, but the removal of the cause produced a cure, radical and permanent; not a final destructive trauma.

CASE REPORTS

Case 1.—November 9, 1903, Miss Mary L., aet 51, came with the right lens lying down and hinged at its lower border. It had been dislocated for two weeks. I read the authorities to her, and had her consult a prominent oculist who

also followed the advice in the textbooks. We waited. The eye steadily degenerated, and on Feb. 8, 1904, (three months), all vision was gone, the eye was soft and I advised its removal. Could an unsuccessful operation have been worse?

Case 2.—June 10, 1909, the left lens of this same woman began to loosen at the top. As the eye was not troublesome I waited; but the patient noticed the eye was gradually failing. In a little over six months, Dec. 29, 1909, the poor woman arrived at my sanitarium from another town at 7:30 P. M. The pain was intense, nausea persistent, vomiting frequent, patient was under opiates and had walked the floor the night previous. The lens was tipped far back and low down; the globe was as hard as a baseball and she could make out only hazy yellowish outlines. Realizing my inexperience, I had recommended this patient to several operators of wide reputation. She did consult some, but they gave her no encouragement, but when fulminating glaucoma attacked the eye, further delay was out of the question. It was night, a light had to be improvised at once, and this case gave the first point and basis to the Paine operation. I had thought about, and studied this case, but illuminating the interior of an eye while operating had never occurred to me until compelled by that emergency. Four months after operating she had 1/10 vision. In ten months the eye had 1/2 vision, and in one year and a half after operating, the degenerative changes had so recovered and the eye became so normal, that this eye read half the letters on the twenty-twentieth line and diamond type nearby with ease. This eye continued to gain for another year until the patient died.

Case 3.—Walter O. C., aet 25, came Oct. 23, 1916, with a congenital cataract that had recently dislocated forward thru the pupil into the anterior chamber. For the sake of good illumination and to be in readiness should the small undeveloped lens slip into the vitreous, the operation was performed in the evening and the same simple lighting arrangement was used. This case was entirely successful tho the neighbor who held the light and the patient's doctor, who

held the speculum, had never assisted at an eye operation before.

Case 4.—Mrs. C. H. T., sister of Miss L. (above), came July 13, 1914. I found the right lens dislocated so far down and back and hinged, that it was impossible to see it without looking from above downward almost in line with the forehead. The patient had suffered from mild attacks of increased tension, that readily yielded to eserine, for seven years, but had changed her glasses from a weak plus to a minus 5.50 combined with a cylinder, and these gave vision of less than 20/30. This lens never showed in the pupil. It finally broke loose entirely and floated about in the vitreous.

Case 5.—The same person as Case 4. February 9, 1915. The lens of the left eye began to luxate. This made four dislocated lenses in the eyes of two sisters. The dislocations occurred between the ages of 51 and 57. In Dec. the right eye "commenced to fail." Black specks were in evidence in increasing numbers and density; bright flashes appeared frequently, the light causing lacrimation. It was the beginning of the end. I had delayed operating because I had no guide except my own experience and did not want to possibly destroy what vision there was by attempting the "impossible." After operating, I could not see, nor can I now, why any good operator should not repeat my operation successfully. Both eyes were operated on, the right Feb. 21, 1915, and the left May 6. Lacrimation slowly improved, both eyes grew stronger, the light could be borne better, until Aug. 24, 1915, when both eyes were fitted to glasses, six months after the operation on the right, and four months the left. Either eye reads twenty-twentieths and the finest type either singly or together. On March 1st, 1918, three years after operation, this patient read for me, standard type both near and far, with each eye and both together, and said that her eyes are now more normal and comfortable than they have been for ten years. She threads and uses a No. 7 needle with ease. This is the case presented and examined at Rochester and Saratoga.

Case 6.—Mr. G. C., aet 60. Traumatic dislocation of right lens which

was hinged at its outer lower quadrant, and hung out and down. May 11, 1915, removed this dislocated lens. After the incision it moved forward somewhat, as an illy defined, hazy mass, situated deep in the vitreous. The eye was illuminated. A Smith spatula was placed behind the lens and it was removed with ease. This eye healed uneventfully. The eye was clear. The patient is illiterate and does not care to use it as the left eye is normal. There is a small detachment of the retina in this eye located directly under where the cataract rested, whether the result of the trauma or associated with the operation I do not know. It could not be seen until the lens was removed.

The above six cases are all I have had to deal with in recent years. One was left to itself and became sightless in three months. Five were operated on and the results were perfect. In no eye has degeneration occurred after the operation, but every one has improved. These were not cases "for which little skill and less thought suffice," Meding,⁸

nor were they "eyes that would withstand every possible manipulation," id. because we all know that inherent weakness exists in eyes where lenses luxate spontaneously. They were all sick eyes except Case 6. (Traumatic.)

A friend of mine, an eye surgeon on the staff of one of the largest eye hospitals in New York City, told me that in 34 years of hospital experience he could not recall that he had any more cases of dislocated lenses than I had had. Now, if that is so, my experience should not be a "happening." Five such cases in series have more than good luck or accident associated with them. They should form a "basis for general and safe advice," Meding,⁸ and by clearing up this dreaded subject, they are not "dangerous as precedents inseparable from the experience in which they occur." id. The number of these cases is small. But should they be neglected, or is that any excuse for remaining ignorant of a successful method to relieve them?

BIBLIOGRAPHY

1. Paine. *Ann. of Ophthalmology*, v. 24, p. 496.
2. *American Encyclopedia of Ophthalmology*, v. 1, p. 184.
3. Török and Grout. *Surgery of the Eye*, p. 266.
4. Beard. *Ophthalmic Surgery*, 2nd ed. p. 529.
5. Fuchs. *Text-book of Ophthalmology*, 1917 ed., p. 558.
6. Ball. *Modern Ophthalmology*, p. 470.
7. Gruening, Norris and Oliver's *System of Diseases of the Eye*, v. 3, p. 691.
8. Meding. *New York State Journal of Medicine*, April, 1917.
9. Reber. *New York State Journal of Medicine*, April, 1917.
10. Bissell. *Tr. New York State Homeop. Medical Society*, 1916.
11. Thompson, *New York State Journal of Medicine*, April, 1917.
12. Smith. *The treatment of Cataract*, p. 22.
13. *American Encyclopedia of Ophthalmology*, v. 10, p. 7206-7211.
14. Smith. *The treatment of Cataract*, p. 23.
15. Fuchs. *Textbook of Ophthalmology*, 3rd edition, p. 464.
16. Beard. *Ophthalmic Surgery*, 2nd ed., p. 528.
17. Meller. *Ophthalmic Surgery*, 2d ed., p. 169.

A THEORY AS TO THE ETIOLOGY OF GLAUCOMA.

ROBERT SCOTT LAMB, M. D., F. A. C. S.

WASHINGTON, D. C.

This paper traces an apparent connection between disturbance of balance among the internal secretions and glaucoma, and points out the therapeutic application for such a conception of the disease. Read before the American Academy of Ophthalmology and Otolaryngology, October, 1917.

In a paper read before the American Academy of Ophthalmology and Otolaryngology in Memphis, Tenn., December, 1916, I made the statement that, "The more chronic inflammations may usually arise in conjunction with vagatonia, but such a condition as simple glaucoma is probably the end result of of gonadal and adrenal insufficiency. Whereas acute inflammatory glaucoma is probably the result of a sudden imperative demand upon the adrenals for secretion to sustain itself against shock, fear, etc., in the presence of gonadal and adrenal insufficiency; for although the secretion is forthcoming for a short period, the inability to continue to supply it causes a precipitate lowering of sympathetic tone and throws the balance under the control of the vagus. This, of course, in the presence of predisposing factors, such as high hyperopic eyeballs and other anatomic abnormalities." In continuation of that thought and in order to substantiate it I have thought best to record some few, if not all, of the reasons which led me to make this statement.

I have taken this opportunity to come before you with a subject which is of vital interest to us all and of serious moment to our patients; in the hope that your discussion may corroborate my findings, or that differences of opinion or experience may be brought out which will be of benefit to us all.

The first thing that I should like to bring to your attention is the fact that the majority of patients having acute inflammatory glaucoma are "getting along in years"—somewhat beyond the period of life when the "change" occurs—that is to say 45 years of age—and also that it is in the habit of occurring in nervous or neuropathic patients

belonging to families with neuropathic tendencies. As is well known many of these patients have lived on rich food and have been addicted to stimulants, and their lives have been full of excitement.

The history of the average case contains evidence of a definite shock occurring at an early age, to disturb the internal secretory balance; in these cases frequently there is chorea. Then about the time of puberty there is apt to be a history of a nervous upset and frequently a breakdown and the withdrawal of the child from school. During the adolescent emotional period there have been nervous disturbances associated somewhat with headache; and as this period passes into that period of life wherein the burdens of life are taken up with more serious intent and purpose, there is apt to be the beginning of headache of a unilateral character, frequently associated with scintillating scotoma. Of course, in no single case do all these symptoms necessarily occur and we need not expect to find them all. And so, thru the easily disintegrated subsoil structure of such an individual, filters the effect of repeated shocks, until the system is well-nigh exhausted. Furthermore, there seems no end to the multiplicity of intercurrent etiologic factors of an indirect character which help to tear down the barriers thrown up by the defense mechanism of the body.

Thruout the prodromal period there are recurrent attacks of intra-ocular tension often accompanied by unilateral headache. These are frequently treated by the family physician, and as the significance of such recurrent headaches of this character has not been definitely brought to his atten-

tion, these headaches receive no ophthalmologic consideration. Again, the ophthalmologist seeing such a case may not have realized the possible consequence of repeated attacks of this character; and so may correct the patient's refractive error with glasses, which for the most part relieve the headache, and nothing further is done until an acute attack comes on.

It is impossible in the limited time that we have to go into the analysis of the contributing etiologic factors; and as I do not propose to consider the treatment or management of glaucoma it seems only fair to presume that we are all familiar with the commonly accepted predisposing elements making up the fabric of the substructure upon which the glaucoma may supervene; such as anatomic structural predispositions; age, arteriosclerotic changes, chronic gastro-intestinal diseases, long standing genito-urinary troubles and so-called "Rigg's Disease;" occurring in an individual with a rather well-known nervous temperament.

We all know the picture of an acute inflammatory glaucoma with its early intense bright red congestion, accompanied by general swelling and a tendency to dilated pupil, shallow anterior chamber, clouding of vision and an excruciating pain, precipitately following a shock to the nervous system—usually thru emotional pathways. The picture later changes to one of deep congestion, with a steamy cornea, turgid conjunctiva, subconjunctival and orbital tissues, frequently associated with vomiting. This picture, of course, is quite different from the condition we have known as simple or chronic glaucoma; and yet I am not so sure the underlying factors of the latter are very different. They are probably simply acting with less intensity over a longer period of time.

Holding this picture up to the light of analysis by reason; it is only fair that we ask ourselves, first, what produces an acute congestion? Our answer must of necessity be, activity of the sympathetic nervous system of the sympathico-tonic type, stimulating the vasoconstrictors, which tends to in-

crease the arterial flow. Next we say to ourselves, what activates the sympathetic, of the sympathico-tonic type? And we find the suprarenal glands, or that adrenalin so activates the sympathetic nervous system, and that the thyroid sensitizes the end plates of Langley on which the adrenalin works. And again, what causes the passive congestion when the venous trunks are engorged? We realize that the vasomotor dilators following stimulation to the vagus nerve cause passive or venous congestion. A lack, therefore, of suprarenalin secretion or thyroid active principle would give the pituitary a chance to bring about a control by the vagus. The gonads being closely associated with suprarenalin, both by embryologic origin and physiologic relationship, are called upon in the presence of suprarenalin activity to assist in the defense processes of the body. If, therefore, they are called upon in acute glaucoma to add a sustaining quality to the defense, and are found wanting, what is more natural than that the vagus nerve should take charge, thereby producing a venous congestion and causing the marked turgescence which is so commonly seen in the later stages of an acute inflammatory glaucoma.

If the hypothesis is correct what then would be the best method of medicinally controlling such a condition? By administering those drugs which would tone up the sympathetic system and so improve the circulation, at the same time causing all over the body a relaxation of the smaller veins. We then ask ourselves what drugs can do this, and we find that adrenalin chlorid will tone up the sympathetic system, and pilocarpin, acting thru the vagus, will give us sufficient relaxation to permit the re-establishment of the circulation, more normal tone and a gradual restoration of the local structures to size and condition approaching that which immediately preceded the acute attack.

This has been tried out now in thirteen cases and has been successful in each case, in restoring the eye to a relatively normal condition, so that the

dangers from a subsequent operation to increase the drainage, were undoubtedly very much lessened; and as the visual results were better than in other cases operated on previously, during an acute attack, it was deduced that perhaps the method of controlling the condition first and operating later, when relations of the structures had become approximately normal, had some advantages over any operation done under adverse circumstances at the time of the acute attack.

I merely make the statement of the results of applying this theory to indicate that in all likelihood the theory has its merits. Tho, of course, a few cases do not entirely prove the theory, it is certainly a basis from which we may approach cases occurring in our

practices in the future. So far as I can see my previous statement regarding simple and acute glaucoma, that they are similar in character, except for the intensity of the vasomotor changes, being less intense in simple glaucoma and almost violent and cyclonic in acute glaucoma, is probably true.

I have offered this theory of the etiology of glaucoma to stimulate discussion of the subject and do not claim for a moment that I have proven that it is correct. It is offered further as a suggestion for assistance to those who are seeking some better way of obtaining more satisfactory end results than those they have been able to obtain by methods previously suggested and in relatively general use for the management of this affection.

A STUDY OF THE EYE IN DEMENTIA PRECOX.

FREDERICK F. TEAL, M. D.

LINCOLN, NEB.

Reviews the literature of its subject and records the results of the author's observation on 53 cases of dementia precox with his conclusions, which in the main agree with those of previous writers. Read before the American Academy of Ophthalmology and Oto-Laryngology, Oct. 30, 1917.

Inasmuch as the majority of oculists see comparatively few cases of dementia precox, it might readily be concluded that a discussion of the eye in relation to dementia precox is, to all intents and purposes, academic. But if we believe all we are told by later day investigators, this disease is and must continue to be on the increase particularly if it is to be explained on a luetic basis. If, therefore, oculists can point out certain definite changes in the eye as pathognomonic of early stages of the disease, and our knowledge of the causative factors becomes equally sure, the importance of the investigation of the eye in suspected mental deterioration takes on a new aspect.

At the time I took up my investigation, I did not realize that the field had been covered as well as it has. In Europe, the subject has been taken up by Kuhnt,¹ Blin,² Meyer,³ Reichman,⁴

Bumke,⁵ Murchie,⁶ of Glasgow, and others; while in this country, Posey and Spiller,⁷ Tyson⁸ of New York, Thomas¹⁰ of Oakland, California, and Cooke¹⁰ of Seattle, have made considerable investigations in this field. They largely directed their attention toward the formulation of a syndrome of the eye in dementia precox.

Spiller and Posey, in their work on "The Eye in Nervous Diseases," conclude that there are no ocular phenomena of importance, no pupillary changes peculiar to any mental disease; and go on to state that where actual and persistent pupillary changes are found to exist, we can assume the presence of grave or organic disease. After discussing the investigations of other workers of the various pupillary reflexes and other phenomena, they conclude: "That in dementia precox definite changes in the pupillary reactions are not found,

save first, such as can be attributed to defective innervation, i. e., the dilatation of the pupil; and, second, such changes or deficiencies of action as depend on diminished psychic activity."

In 1908, Tyson wrote an article on "The Ocular Disk Changes in Dementia Precox," and another in 1912 on "The Eye Syndrome in Dementia Precox," working in collaboration with Clark. His data, description and conclusions are clear-cut and forcibly presented, but have not been confirmed by other observers, except in part. He lays great stress on the disc changes, basing his conclusions on a carefully studied group of 115 cases of dementia precox. Accompanying the article are three admirable water colors, illustrating the different phases of a low grade optic neuritis or perineuritis. The first shows congestion of disc, hyperemia and edema; dilated, dark-colored veins, with contracted arteries, and blurring of the edges of the disc. The second shows congestion of the nasal side, with temporal pallor of discs while the third shows pallor of discs with dilated veins and contracted arteries. He claims these different pictures are found practically only in dementia precox.

He also examined the pupillary changes in 85 cases. Here his observations were just as positive as they were in those of the fundus changes. There was a constant enlargement in the size of the pupil; the sensory reflex was absent in 79 instances, and the psychic reflex in 85.

The visual color fields were examined in 81 cases. All were concentrically contracted from 30° down to nothing, the average field being 10.6°. He admits, however, that there was cause for error in the taking of fields, due to the lack of cooperation, in numerous instances, on the part of the patient; and the results of these examinations were included in his averages, which makes his conclusions in regard to the fields somewhat unreliable. In summing up, he says: "The changes in the discs, pupils, visual fields (and corneal sensibility), when taken together, constitute the new syndrome and are

all in accord with each other. In our examination of all other types of insanity, imbecility or idiocy, we have found no other condition similar to what we have outlined here for dementia precox. The * * * * findings indicate that dementia precox is attended by such an early and constant syndrome of alteration of disc, visual field, pupil and corneal sensibility as to materially aid in diagnosing this psychosis."

Tyson's investigations would seem to have settled the matter of pathognomonic syndrome of dementia precox, but Thomas, of Oakland, California, while confirming his investigations in part, seems to have found practically the same disc and fundus changes in a number of forms of insanity. In an article published in the American Journal of Insanity in 1914, entitled, "Optic Neuritis and the Color Fields in the Diagnosis of Syphilis, Neurasthenia, Hyperthyroidism, Dementia Precox, Manic Depressive Insanity and Third-Generation Insanity," Thomas, as he expresses it, takes a bold plunge. He argues that our preconceived ideas of the appearance of the normal disc are wrong; that minor and lesser degrees of optic neuritis are entirely overlooked and classed as normal. After describing his conception of the appearance of a normal disc, he pictures and illustrates seven stages of disc changes, ranging from the normal to a well developed papillitis. He lays great stress on the presence or absence of the porous opticus, or physiologic cupping, saying, "I believe that every disc without a porous opticus or with a faintly marked one is abnormal, and should be so considered." The stages referred to above illustrate the natural cupping, gradual filling of cup, no cup (causing a flat appearance of disc), slight elevation, distinct swelling, and finally disappearance of the sharp outline of the disc, merging into the fundus.

Thomas examined a great many cases of different forms of insanity, and claims to have found the low-grade optic neuritis in all forms of them. He speaks of Tyson's work; and while confirming to some extent his observations

he does not admit that they are peculiar to dementia precox. He explains these changes noted almost entirely on a luetic basis. He gives illustrations of color fields. They show a contraction, most of them sector like with interlacing color fields, and were the result of examination of 17 cases, including three acquired syphilis, acquired tuberculosis, ocular neurasthenia, exophthalmic goiter, maniac depressive insanity, hypophyseal disease, angioneurotic edema, and neurasthenia. The original diagnosis was made from the above eye findings, and the etiology given as syphilis. The conclusion to be derived from the article of Thomas is that in dementia precox, as well as in other forms of insanity, we have a syphilitic infection, acquired or hereditary, producing an optic neuritis of low grade, which is frequently overlooked; that this optic neuritis, shown by one of the various stages of optic disc change, with the sector like contraction of the color fields, means luetic infection in the great majority of instances.

Dr. F. Murchie, in 1913, writing in the Glasgow Medical Journal, concludes that no reliance can be placed on the subjective symptoms, owing to the mental state of the patients with dementia precox. He finds corneal sensibility diminished, light reaction present, but slow; while the psychic and sensory reflexes were normal in 18 per cent, sluggish in 20 per cent and absent in 62 per cent of dementia precox. The fundus changes observed were venous swelling with tortuosity in some cases, arteries contracted, pallor of disc, congestion of disc and sometimes a mixture of the two; that is, nasal half congested and temporal half pale, which confirms certain of Tyson's descriptions; in other words, he finds a papillitis, which appears in other conditions also, of the same type as in dementia precox. He goes on to state that a differential diagnosis cannot be made on eye findings alone, but changes in pupils and fundi with vague and mental symptoms might assist in diagnosis.

Cooke, of Seattle, writing in "Ophthalmology," confirms in general

Thomas' findings. He examined four groups, and his conclusions are more clear cut and distinct than those of Thomas. He found, in 24 cases of general paresis, 28 cases of dementia precox, and 12 cases of maniac depressive, the same filling in of the porus opticus in all stages, with pallor of papillomacular bundle, indistinctness of disc margins and vascular abnormalities in all three groups, which rather conclusively contradicts Tyson's statement that these changes are peculiar to dementia precox alone. Like Thomas, he believes that these cases are practically all syphilitic. He examined the discs of seventeen normal persons, and found some of the above conditions present in four of them; which leads us still farther away from the idea of a syndrome in dementia precox.

Professor Bumké, in an able article written on the pupillary disturbances in dementia precox, gives us the nearest approach to a syndrome which I have found. He describes, first, a lack of the psycho-reflexes; second, the lack of the normal restlessness of the pupil; and third, the absence of reflex mydriasis in response to sensory stimuli in the presence of maintained light. In regard to the absence of the normal restlessness of the pupil, he goes on to state that the pupil of a normal person is in a constant state of motion. The loss of this "springiness" of the pupil, as it might be designated, is invariably indicative of dementia precox. He says that the reason that this has not been observed by investigators in general is that it cannot be determined with the naked eye; he, himself, having used a suitable magnifier in his investigations. His observations, as above noted, were confirmed by Heubner in a large majority of 236 patients. Siglos also found a lack of "springiness" of the pupils and the loss of the sensory reaction in 12 out of 13 hebephrenics, 16 of 17 catatonics, and 9 of 10 paranoid dementias. Bumké also goes on to say that the pupils are constantly larger than normal.

My own observations include an examination of 53 cases of dementia precox and 13 cases of maniac depressive

insanity. The changes in the disc noted in dementia precox did not confirm Tyson's observations except in part. I did not find one instance of disc alteration as shown in the third illustration of his article. The changes were more as those described in Thomas's article. The most constant feature of the change in retinal appearance was the dilated and sometimes tortuous condition of the veins, together with the contracted arteries. The disc at times was of a normal appearance, while at others it would range from a hyperemic condition to a quite well-marked papillitis, and occasionally would show a condition described by both Tyson and Thomas—that is, the inner side congested, and the temporal side pale. I found the cupping normal in 40 per cent, diminished in 45 per cent and filled in 15 per cent.

I attempted to examine the fields; but, naturally, this was impossible, except in a limited number of instances. I did take, however, the form and color fields in 15 selected cases of dementia precox in the more recent stages of the disease. Wherever there appeared to be any discrepancy in their answers, I took the fields a number of times, and did not record results unless they were repeatedly corroborated. The charts show, in the majority of instances, the concentrically contracted field for form and color, with frequent interlacing of the color fields. The contraction ranges from slightly less than normal to 30 degrees, which is practically the same result shown in the investigation of the others mentioned. The maniac depressives showed the cup filled, with deep congestion, in 35 per cent and partially filled in the remainder, even to slight elevation.

In the examination of the pupils, my efforts were directed towards a group of phenomena as described by Bumké; and, my results largely confirmed his observations. I found, in 65 per cent, a lack of the "springy pupil" which he described; while the sensory reflex was absent in 70 per cent. In observing these phenomena, I used a convex lens of 13 diopters, as I found, as suggested by him, that it was impossible always

to accurately see the movement of the iris where its activity was lowered but not absent. I also found that this lack of "springiness" in the pupil, as well as the lack of sensory reflex, was practically always absent in the same case. (Bumké and Weiler never missed these pupillary reactions in sane people—Heubner, in 3 only.) The pupil was a little larger than normal in practically all cases.

Of the 13 cases of maniac depressive, I found the lack of springy pupils and absence of the sensory reflex in 30 per cent. It is possible that the reason my percentage in recording these phenomena of dementia precox are lower than those recorded by Bumké and others quoted by him is because most of the cases which I examined were of fairly recent origin, and it is possible that in later stages of the disease the percentage of these changes referred to would be higher.

An interesting contribution to this subject is given by Bayard Holmes,¹² of Chicago, in a *Lancet-Clinic* editorial, July 24, 1915. He goes on to state that it has been demonstrated in a large number of cases experimented on that a solution of adrenalin, 1:1000, placed in the normal eye, did not cause mydriasis at the end of thirty minutes. He further gives the results of some observations of J. H. Schultz, and also of Richard Cords, of Bonn, in which they found, in cases of indubitable dementia precox, adrenalin mydriasis came on at the end of ten minutes.

In conclusion, the majority of observers so far, myself included, do not find disc and fundus changes that are pathognomic of dementia precox. I believe that the researches of Bumké point more clearly to the possibility of an eye syndrome in this disease; i. e., the absence of psychic and sensory reflexes, the natural "springiness" of the pupil and the enlargement of the pupil. The classification of the different forms of insanity is not always easy, and it is possible that the discrepancy noted between the results of different observers may be due to the fact that our present classification of dementia

precox is not quite as it should be. If future investigators will follow up the suggestion of Bumké in regard to pupillary phenomena, and also the hint

given us by Dr. Holmes, it may lead to something definite in the formulation of an eye syndrome in dementia precox.

BIBLIOGRAPHY.

1. Kuhnt. *Zeit. f. Augenh.*, 1903, p. 89.
2. Blin. Monograph, 241 pp. J. B. Baillière, Paris, France, 1905.
3. Meyer, *Neurol. Centralbl.* Leipsic, 1890, p. 610.
4. Reichmann. *Arch. f. Psychiat. u. Nervenkrank.*, v. 53, p. 302.
5. Bumke, Jena Thesis, 1911.
6. Murchie. *Glasgow Med. Jour.*, 1913, v. 80, p. 133.
7. Posey and Spiller. "The Eye and Nervous System," p. 508.
8. Tyson, H. *Boston Med. and Surg. Jour.* Jan 30, 1908.
9. Tyson and Clark, L. P. *Arch. of Ophth.*, v. 41, p. 223.
10. Thomas, H. G. *Amer. Jour. Insanity*, 1914, v. 62, No. 1.
11. Cooke. *Ophthalmology*, v. 13, p. 34.
12. Holmes. *Lancet-Clinic.* July 24, 1915.

ARTIFICIAL DAYLIGHT ILLUMINATION FOR PERIMETRIC STUDY AND GENERAL OFFICE USE.

LUTHER C. PETER, A. M., M. D.

PHILADELPHIA, PA.

The methods of making artificial light to imitate daylight are mentioned, and the superior comfort of such illumination and its usefulness in giving normal color values are referred to. The advantage for perimetric tests is largely in the constancy of such illumination and its availability at all times. Read before the American Academy of Ophthalmology and Oto-Laryngology, Oct. 30, 1917.

The need of artificial daylight illumination has long been felt, not only for the purpose of lighting up test cards and to obtain uniform results in perimetric work and color studies, but in many instances in order to obtain satisfactory and comfortable lighting for the average professional office in large cities.

When a good northern exposure with adequate window facilities can be obtained, the problem of office illumination is easily and satisfactorily solved. This, however, is the exception, rather than the rule, and even with these conditions fulfilled, there still remain the proposition as to how to obtain uniform results in perimetric work under variable weather conditions and the question of the test card illumination.

Much study has been given to the reproduction of daylight during the past ten years, and Dr. Herbert E. Ives, of the Photometrical Laboratory

of the United Gas Improvement Company of Philadelphia, and Dr. Henry Phelps Gage of the Corning Glass Works, of Corning, N. Y., have contributed largely to the perfecting of methods to accomplish this end. It is needless for our purposes to enter into a discussion of the intricacies of the problems encountered, in evolving the practical and satisfactory devices which are now offered to us. It is pertinent, however, to analyze our peculiar needs and the substitutes for daylight which are most suitable for our purposes.

For office illumination efficient artificial light is not always either satisfactory or comfortable. When simply the question of illumination enters into the problem, one of the ordinary forms of electric lights or the Welsbach burner, when properly safeguarded so as to remove direct glare, may suffice. This form of illumination, however,

will rarely furnish the comfort to the eyes equal to that which is produced by the yellow of the sun's rays, blended with the blue of the sky and filtered thru a rather homogenous atmosphere. Most of these artificial lights, when subjected to spectrum analysis, will show an excess of red, green and yellow. The problem, therefore, which confronts the chemist is the blending of a glass filter so as to reduce or absorb the excess colors, in order to produce a spectrum analysis which is similar to that of daylight. This is a scientific problem which we as physicians must relinquish to the physicist and to photometric laboratories.

What are our particular needs? For perimetric and color studies uniformity and constancy are important factors. Daylight will vary at different times of the day and from day to day under changing atmospheric conditions. If, therefore, we can obtain artificial illumination which approximates the spectrum analysis of sun light, there can be no objection to its use. On the contrary, if such a light can furnish uniformity and constancy in saturation of colors, it must commend itself to us.

In the industrial world artificial illumination is employed daily in the careful analysis and color matching of dye houses and textile mills, and if satisfactory to so crucial a test, it should be suitable for our professional purposes. The distinct advantage to be gained is to be able to examine patients at any time, under uniform conditions and under conditions which can be obtained in any office.

In the selection of a suitable light, one factor at least must be considered, namely, the cost of installation and maintenance. According to Gage (*Journal of Franklin Institute*, May, 1914), an incandescent black body at 5000 C. should furnish a spectrum distribution of the intensity of daylight, but, "such a temperature," he says, "is beyond the present means." The passing of electric currents through a rarified gas—(a carbon dioxide vacuum tube, sold in the market under the trade name of the Moore tube) has been extensively practiced commercially and

with considerable success. The cost of installation and maintenance, however, is prohibitive. An absorbing screen, from the standpoint of economy and efficiency, has therefore proven to be the most practical method of obtaining artificial daylight.

Some months ago, thru the courtesy of a local firm in Philadelphia, the Corning "Daylite" screen was placed on my desk for experimental study. The light emitted was so free from glare and so much in its general effect like natural daylight, that I was prompted to investigate its qualities. In common with all forms of screens devised for a similar purpose, the light furnishes only 15 per cent of efficiency, the balance being absorbed by the filter so constructed as to reduce the blue, red and yellow to normal daylight values. This, however, is the only objection.

The Corning Glass Works, who manufacture it according to the method evolved by Dr. Henry P. Gage, claim that in its spectrum analysis it approximates normal daylight. This claim has been verified by other physicists.

For my perimetric studies, I have had in use a 75 watt Mazda lamp, covered by the "daylite" screen and protected by a deep reflector so as to prevent the direct glare. It furnishes an evenly distributed illumination to the campimetric surface; which gives one the sensation of good daylight exposure, and is the most satisfactory form of artificial illumination which I have thus far employed. The illumination of the test card is softer and whiter than by Mazda lamps covered with frosted glass. For desk use the light is ideal.

I have no desire to appear in the role of an advertising agent for the output of any commercial house. But as we are dependent upon the product of some photometric laboratory, and as all daylight screens are manufactured by the Corning Glass Works, I do not hesitate to recommend to the profession this "daylite" lamp or screen, as being admirably adapted to our special needs. Furthermore, with uniformity

of illumination obtained at a nominal cost, there can be no objection to concerted effort on the part of the profession to do their perimetric work under the best possible conditions, with at least an attempt at standardization of methods. From a scientific standpoint, there can be no objection to an artificial illumination which will stand the test of spectrum analysis.

We have much to learn in qualitative and quantitative perimetry. Quantitative studies have been fairly well worked out by the means at hand, and our knowledge has a fair degree of accuracy even without an attempt at standardization of methods and of illumination. Qualitative studies, however,

which after all, are the studies of real value, have not been developed to the same extent. Standard illumination has been lacking. Color thresholds have been studied under all degrees of illumination, notwithstanding the fact that there is a vast difference between studies of the light-adapted eye and the scotopic or dark-adapted eye. Examinations made in a subdued light, or in so called twilight, will not yield the results of maximum photopic vision. Standard illumination, therefore, which can be controlled, will not only aid materially in obtaining uniform results, but will help to develop valuable scientific information in qualitative perimetry.

SHORT ABSTRACTS.

Under this heading only points of the greatest importance will be noticed. For the systematic review of the literature see "Digest of the Literature," a part of which appears each month.

Holmes, G., and Lister, W. T. Disturbances of Vision from Cerebral Lesions with Special Reference to the Cortical Representation of the Macula. (Brain, Vol. 39, 1916, pp. 34-73.)

In opening these authors say, "Owing to the conditions under which we have worked, most of our observations were necessarily made at a relatively early date after the infliction of the wound." The fact is recognized that it makes possible the objection that the cases were mainly examined during the stage in which the effects of shock or diasthesis were still present.

They also say: "The visual defects we describe may have been due to functional disturbances rather than to localized injuries of the corresponding cortical areas or of their centripetal fibers; but if we can show that there is a constant relation between the probable site of the injury and the form of the visual defect, it is obvious that certain general conclusions will at least be justifiable." These are presented with the statement that they can not be regarded as final as follows:

1. The upper half of each retina is represented in the dorsal, and the lower in the ventral part of each visual area.

2. The center for macular or central vision lies in the posterior extremities of the visual areas, probably on the margins and the lateral surfaces of the occipital poles.

3. That portion of each upper quadrant of the retina in the immediate neighborhood of, and including the adjacent part of the fovea centralis is represented in the upper and posterior part of the visual area in the hemisphere of the same side and vice versa.

4. The center for vision subserved by the periphery of the retinae is probably situated in the anterior end of the visual area, and the serial concentric zones of the retina from the macula to the periphery are probably represented in this order from behind forwards in the visual area.

GEORGE A. MÔLEEN.

Marie, P., and Chatelin, C.—Visual Disturbances due to Lesions of the Intracerebral Optic Pathways and of the

Cortical Visual Sphere as the Result of Gun Shot Wounds of the Head. (*Revue Neurolog.*, Vol. 28, 1914 and 1915, pp. 882-925.)

These authors review extensively their experiences with this subject, paying particular attention to the calcarine region of the occipital cortex with relation to segmentation of the visual fields and the corresponding lesions responsible for them, as well as macular vision and central and pericentral scotomata.

It was found that the great majority of the wounded coming under their observation, including those cases of cortical blindness, inferior hemianopsia, quadrantic hemianopsia, hemianopic scotomata of all forms, single and multiple, all demanded methodical research by means of a perimeter, because these lesions were very often ignored both by the injured and the physician. The estimation of the visual field was taken with great care by means of a perimeter, and always by daylight—the patient having his back toward a window, in a black walled room. Three discs were employed for measuring purposes, respectively, one, five and ten millimeters in diameter. The first being used to measure the limits of the purely macular scotomata. The margins of the color fields have been measured in the same manner for red, blue and green.

The examinations have been repeated in their entirety at least twice with an interval of several weeks, sometimes they have been taken three or four times. These investigators have been very careful to avoid fatigue; it having been shown by Schiele that prolonged examinations of the visual fields which showed contraction in one eye seemed to cause an apparent retraction of the identical dimensions of the visual field of the other eye. Likewise, in the course of the same examination if the patient complained of fatigue, further research was suspended. Thus, they have in a total of about three hundred wounds of the head, segregated more than thirty cases, in which there were disturbances of the visual fields presenting the characters to which they

have called attention and have grouped under the headings listed above.

In conclusion they say that their observations have not only a theoretical interest, but from the therapeutic point of view they are of definite importance.

First. The establishment of modifications of the visual field has always been associated with the use of the radiograph. In more than half of the cases this has shown the presence of an intracerebral foreign body that was not suspected.

Second. They believe that the measurement of the visual field with the recognition of a hemianopic scotoma furnishes valuable means of the earlier recognition of an intracerebral suppuration. The rapid development of a scotoma should make one think of the possibility of abscess.

Third. The latter circumstance is a contraindication of surgical intervention in the majority of cases, even if there is a foreign body as revealed by radiograph; because the operation involves a greater risk of increasing the deficit in the visual field, and there would not be as a result any advantage gained by such an operation.

GEORGE A. MOLEEN.

Roche, Charles.—Unequal Pupils in Lesions of the Macular and Paramacular Region. (*Archives d'Ophthalmol.* Vol. 35, Sept.-Oct., 1917, p. 680.) With the exception of syphilitic atrophy of the optic nerve and those cases in which the inequality of the pupils is due to central nervous lesions, the pupils are, as a rule, equal, even tho there may be great differences in the vision of the two eyes. The inequality noted by some observers in monocular atrophy of the nerve is so slight that it can be noted only under certain light conditions. The anisocoria of which the author writes is so apparent that it invites recognition.

He gives the histories of nine cases in which the macular or paramacular region is involved, in all of which the inequality of the pupils was evident. Some of these were cases of a traumatic nature, such as injuries from shells or a

blow with a stick of wood; others were of unknown etiology, and one was a case of retinal detachment. All of them concerned the macular or paramacular region. Cocain mydriasis and pilocarpin myosis did not alter the relative sizes of the pupils, but eserine produced such a maximal myosis that no difference between the sizes of the two pupils could be observed. The larger pupil was always in the eye showing the macular or paramacular changes, irrespective of the total amount of disease present in the two eyes, or the relative amount of vision present.

The author does not admit a primary lesion of the pupillary sphincter in explanation of the phenomenon, as the anisocoria is seen in medical as well as in traumatic cases. There must exist either a paralysis of the constrictor, or a contraction of the dilator. If the dilatation is due to a break in the motor path the break must take place at the posterior pole of the eye where the anatomic lesions present themselves. This is the place where the short ciliary nerves enter the globe, and to compress the rich plexus formed by these fifteen nerves the lesion would have to be much larger than those generally seen in the cases reported. Besides that would mean increased pressure, and in one case of retinal detachment and others the tension was minus. Besides, the pupillary reflexes, even tho they be slow when the diseased eye is illuminated, are very active when the sound eye is illuminated.

The theory that the mydriasis is due to a hypertonus of the dilator seems the real and easy explanation. Whereas a marked amount of compression is necessary to inhibit the motor impulse, the slightest amount of "irritation," such as a subchoroidal effusion, a bloodclot, or the dragging of a scar, is sufficient to produce contraction. As the pupillary sphincter retains its function the mydriasis will be of a moderate degree only; and contraction of the pupil will ensue whenever any myotic, light, or convergence are brought to bear. In the same way any mydriatic

adds its effect to the already existing dilatation proceeding from the posterior pole. The dilatation is probably due to the direct excitation of the sympathetic fibers by the lesion in the posterior pole. The fact that the inequality of the pupils can and did disappear in two of the cases recorded, proves that it was due to an irritation, and not to a paralysis.

M. W. F.

Alt. Adolf.—Calcium Chlorid in the Internal Treatment of Glaucoma.

(*Amer. Jour. Ophth.*, Oct., 1917.) The writer calls attention to the translation of an article by Weekers which appeared in 1912, but which has attracted little attention. Since then he has had occasion to employ calcium chlorid internally in about a dozen appropriate cases, that is, cases in which for some definite reason, an operative interference was not practicable, or cases in which the patient simply flatly refused to have any kind of an operation performed; some of these were of the acute inflammatory type, and some of the simple chronic form.

After the ingestion of the calcium chlorid almost every one of these patients showed within 24 hours a decided improvement in the glaucomatous symptoms. It was almost the rule that the severe pain in the inflammatory cases became much reduced or actually disappeared in 24 hours. The high intraocular pressure, also, was reduced. Of course, miotics were also used in all these cases, but in some a marked improvement started in with the exhibition of the calcium chlorid.

As Weekers pointed out, one cannot very well say that the beneficial effect is due to the calcium chlorid alone, yet it has been marked enough to convince that it should be used and be given a full trial in appropriate cases. Weekers recommended the use of 15 grains three times a day; the writer has, in a few instances, prescribed considerably more than a drachm a day; the remedy has been taken for months without discomfort.

Gowland of Buenos Aires used it in 2 per cent solution injected in doses of 2 cc. subcutaneously into the gluteal region

and says: "Such injections are painless; are followed by a slight rise in temperature; the intraocular tension is diminished; the pain disappears in from two to three hours; there are no gastric disturbances." C. H. M.

Weekers.—Sympathetic Ophthalmia and the War. (*Archives Méd. Belges*, March, 1917, No. 3.)

In more than 800 cases of ocular injuries during the war Weekers has observed no case of sympathetic ophthalmia. He questions whether statistics previous to the war have not confused simple sympathetic irritation with sympathetic ophthalmia (typical sympathetic uveitis).

When the ocular injury is such as to permit conservation of the globe the author institutes conservative treatment. But after waiting a month or six weeks, if the injured eye remains painful and irritable ablation is considered. If, in the meantime, atrophy of the globe and exudative iridocyclitis develop removal of the eye becomes necessary without delay. In such cases Weekers does an exenteration.

DANIS.

Hughes, H. S.—Attack of Acute Glaucoma after Use of Holocain. (*Amer. Jour. Ophth.*, May, 1917.) The patient was a woman, aged 34, who had chronic glaucoma and whose condition the author watched for about 12 years. One per cent holocain was used in each eye before taking the tension with the McLean tonometer; three drops of fresh solution were used in the right eye and two in the left. Two hours after the tension was taken, the patient developed acute glaucoma in both eyes. The author attributes the glaucomatous attacks to one of three things:

First. A profound mental impression may have been made upon the patient by putting her upon a table and working over her with the tonometer to such an extent as to depress her sympathetic nerve poise with the above result.

Second. She might have developed this attack the day she came to the office and my investigation may have been unfortunately coincidental.

Third. The holocain used anesthesiologically may have been responsible. He concluded that the holocain solution was responsible for the condition.

J. M. WHEELER.

Argañaraz, R., and Belgeri, F.—Sarcoma of the Iris. (*Archivos de Oftalmologia Hispano-Americanos*.) Among 150,000 cases in the Eye Ward of the Buenos Aires University, there have been only two cases of primitive sarcoma of the iris. One described some time ago by Dr. Lagleyze, and this one described by the authors, giving thus 1 for every 80,000 cases, while Hirschberg gives 1 for every 85,000 and Komoto 1 for every 3,500 cases. There are in all about 12 cases of leucosarcoma of the iris in the literature. The case described was in a young French woman 28 years old, who 11 years previously had suffered a heavy traumatism over her right eye, and six months afterwards ocular disturbances began to be noticed. The symptoms increased and when seen vision was absent and there were violent pains, the eye being edematous and inflamed. Enucleation was done and the histologic findings were diagnosed as follows: perithelial angio-sarcoma.

F. M. FERNANDEZ.

Butler, T. H.—Spring Catarrh; Its Diagnosis and Treatment with Radium. (*Brit. Jour. Ophth.*, July, 1917.) The writer's reasons for presenting this paper are that the diagnosis is not always made in atypical cases, and that it is not generally recognized that radium is a specific for this disease. An examination of the smear from the conjunctival discharge (the slide being fixed with alcohol and ether and stained with eosin) will establish the diagnosis since there is constantly present a large number of eosinophil cells. It is possible to confuse an atypical example of phlyctenular conjunctivitis with spring catarrh clinically, but an examination of the smear will clear up any doubt. The differences between spring catarrh and trachoma are pointed out and also the fact that the two diseases may coexist.

The writer mentions the various plans of treatment, all of little value until radium was used; he tried the total exclusion of air recommended by Beyer, and found it helpful but not curative. He gives the histories of two patients who had spring catarrh to illustrate the mode of application of radium. The first case was treated as follows: A tube containing 45 mgm. of radium bromid was applied to each everted upper lid for five minutes and repeated after three weeks; after a month there were neither subjective nor objective symptoms. The second patient received applications of small square varnished plates each containing 7 mgm. of radium bromid; these were applied to the lids and to the borders of the cornea from 8 to 15 minutes, and the applications repeated; all subjective symptoms disappeared and the circumcorneal elevations were much smaller.

In conclusion, the writer quotes Sir James Mackenzie Davidson: "I may say that in every case, without exception, which I have treated with radium the plaques have completely disappeared, leaving no scars at all. In a few cases the eye has continued irritable and injected, but the appearances characteristic of the disease have not appeared. I look upon radium as a specific for spring catarrh."

C. H. M.

Seto.—Influence of Eel Blood Serum upon the Eye. (Nippon Gank. Zasshi, Jan., March and May, 1917.) This is the close of his series of communications. He first shows the influence upon the pupil of rabbits by local and intravenous injection of the eel blood. In a few minutes after injection of eel blood serum into the ears of rabbits, strong myosis appears (1.5 to 2.0 mm.), but this does not occur from dropping it into the conjunctival sac nor by touching the bulb with the serum. Myosis appears by injection into the cornea, into the vitreous and anterior chamber, more pronounced in the operated eye. This myosis may be rendered most pronounced by simultaneous subconjunctival injection of adrenalin solution and by electrical irritation of the sympathetic of the neck. Atropin does

not counteract serum myosis. The blood vessels of the iris are found to be greatly enlarged, and albumin appears in the aqueous humor even to twenty times its normal amount. Examination by Psimuski's method demonstrates undoubtedly dilatation of the blood vessels of the rabbit by eel blood serum. Deep narcosis by chloroform causes greatly contracted pupils to enlarge about a millimeter. Bleeding from the choroid likewise allows the pupil to dilate slightly. From his many experiments, the author concludes that the myosis is due to irritation of the sphincter muscle cells and to the dilatation of the blood vessels. Eel blood is a poison to the blood vessels by instillation into the conjunctival sac, and also, by injection into the anterior chamber, causes changes in the choroid and the internal retinal layers.

KOMOTO.

Moret.—Ocular Troubles with Spirochetosis Ictero-Hemorrhagica. (Archives Méd. Belges, Dec., 1917, p. 1105.) The more serious forms of this disease are accompanied with different ocular troubles. During the acute period of the disease (the congestive stage) one meets with vasomotor troubles, and conjunctival congestion (not inflammatory) corresponding to congestion in the uveal tract, retina and optic nerve, and hemorrhage of the conjunctiva and deeper membranes. In thirty severe cases of this disease the author observed two cases of true iritis. In the anemic period of the disease one finds asthenopia and muscae volitantes; and the ophthalmoscopic examination reveals an anemic retina, and sometimes a neuroretinitis.

DANIS

Penichet, J. M.—The Vaccine Treatment of Trachoma. (Crónica Médico-Quirúrgica de la Habana, January, 1918.) Referring to a previous paper by Demaria, of Buenos Aires, concerning the vaccine treatment of trachoma, Penichet gives his results in ten uncomplicated cases of the disease, that were treated with seven subconjunctival injections each, of a solution containing the trachoma material. The injections

were made at a week interval and in every case there was complete failure after the seven injections. The other five cases that had ulcers of the cornea and pannus and received some injections of the same material did improve slightly after the treatment, but not more than with any other procedure. Penichet concludes that the vaccine treatment of trachoma so far is not to be followed by any good results.

F. M. FERNANDEZ.

Jocqs, R.—Persistent Treatment of Unpromising Conditions. (*La Clinique Ophthalmologique*, June, 1917, v. 22, p. 323.) This writer maintains that it is brutal not to extend some hope of relief to the patient, and persistent therapy alone will maintain the morale. In corneal leucoma, the steady use of mild irritants clears the scars to a marked extent. This, the author demonstrates in the two varieties of patients treated at his clinic. The first group are those from the industrial plants who receive a pension according to the diminution of vision caused by the cicatrix, but are

subject to revision at the end of three years. These patients never follow the treatment for fear that their vision might improve and thus decrease their receipts. The second class are the railway employes who follow precisely all medication, as they are not subject to revision and the reduction in occupational grade is not compensated by the small pension allowed. The first group remain almost stationary, while marvelous results as to the thinning of scars is seen in the conscientious.

We all hesitate to treat the cataract by medicinal means and when this is done there is little confidence in the results. And yet those surgeons who have persistently used potassium iodid as a collyrium have all had some benefit in certain cases. This, however, is a procedure of months and years.

The article concludes with a query as to the number of clinic cases prescribed for in a rather hopeless fashion and yet after a long absence, these same individuals return with a most unexpectedly good result. (The moral of this tale is to keep on trying.)

J. S. W.

SOCIETY PROCEEDINGS.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

December 17th, 1917.

DR. PAUL GUILFORD, President, in the Chair.

Chronic Hypertrophic Conjunctivitis.

DR. E. R. CROSSLEY presented an unusual case of chronic hypertrophic conjunctivitis. The patient stated that about one year ago the left eye became inflamed and congested with profuse lachrimation which continued for eight or nine months. At that time the patient noticed an enlargement and thickening of the upper lid which has

continued to the present. He came to the clinic for treatment about one month ago.

It was with difficulty that the lid was turned on account of thickening. The surface presented a somewhat irregular, rather nodular appearance, to be differentiated from: tuberculosis; Parinaud's conjunctivitis; and possibly trachoma. In a tubercular conjunctivitis there would be found numerous grayish ulcerated surfaces which were not present. In Parinaud's conjunctivitis the swelling usually extends to the retrotarsal folds and conjunctiva of the eyeball. Onset is accompanied by temperature and the preauricular as

well as the parotid glands are swollen and not infrequently suppurate. These symptoms were not present. The characteristic granular bodies of trachoma were not present.

The patient was sent to the laboratory and smears as well as cultures were made from the surface. No organism was found in either smear or culture. A section was taken from the thickened tissue and sections made by Dr. Lane.

DISCUSSION.—Dr. Francis Lane said that for the proper understanding of a disease of an organ it was essential to know the embryology, normal histology and pathology. There were three types of cells which were found in normal conjunctiva—those of hemic origin, cells of connective tissue origin, and others of doubtful origin. Cells of hemic origin are polymorphonuclear leucocytes, not found in any great quantity in normal conditions; but in some suppurative diseases they are found in large numbers, most frequently near the basement membrane. Another cell which we find is the eosinophile; not in any great number except in certain pathologic conditions, in spring catarrh particularly. Another cell of hemic origin found is the mast cell; not very many and not markedly proliferated in any of the pathologic subjects studied in the last fifteen years.

The connective tissue cells found are the fibroblasts, which vary in shape and size. As a rule, the superficial ones are more elongated and the deeper ones more round. The cells which interest us particularly are the endothelial and perithelial, found in the superficial layers of the substantia propria. In any inflammatory condition they proliferate very rapidly. They are apparently ameboid, because they go thru the blood vessels and proliferate outside. Other normal cells are large and small mononuclear lymphocytes, probably originating from the endothelial, the cells lining the lymph gland. The large are found wherever the small mononuclear lymphocytes are found, and probably proliferate wherever the infection is. The relation of the small

and large lymphocytes is not well understood; the large are probably an enormous development of the small lymphocyte.

The cells that are not found in the normal conjunctiva under normal conditions are the epithelioid cell and giant cell. The giant cells are of two types, those which originate from the plasma cell and those which originate directly from the endothelial cell. In the specimen Dr. Crossley gave him there were plasma cells and a few polymorphonuclears finding their way thru the tissues. There was an enormous development of the plasma cells. There were three types, the ordinary type, the large or clasmatocytes and one or two giant cells, chorioplaques, which evidently originated from endothelial cells. The specimen had been taken so that the sections were made transversely. The specimen was five or seven by about ten millimeters. The specimen showed thickened epithelium cells, but the striking feature was an enormous overdevelopment of plasma cells indicative of chronicity. There was a moderate amount of old connective tissue formation. For the want of a better name the type had been described in 1908 or 1909 by Parchet, by Shoemaker and later by Elschnig as a chronic hypertrophic conjunctivitis or conjunctivitis plasmacellularis.

Embolus of the Macular Artery.

Dr. E. V. L. BROWN reported a case of embolus of the macular artery and exhibited the patient.

The patient, a man aged twenty-six years, married, with no children; was coming down town on a street car fourteen days ago at about seven o'clock a. m. He had been reading and on looking out of the window suddenly discovered that his left eye was blind. Examination four or five hours later showed a small hemorrhage just above the macular artery near the disc, with edema of the disc and macular area, tho blood flowed thru all portions of the vessel. There was a typical "cherry-red spot." There was distinct evidence of arteriosclerosis of both retinal vessel systems, not only kinking of veins by arteries, but distinct tortuosity of the smaller vessels, without

which the diagnosis of arteriosclerosis, according to some authors, should never be made.

A physical examination elicited no general arteriosclerosis, and only the temporal arteries felt hardened. Blood pressure was 115-80. The teeth were found sound by x-ray examination and clinically. The Wassermann reaction was negative in both the Presbyterian and Cook County Hospitals, on both the blood and spinal fluid. There was no evidence of tuberculosis. The tonsils were found to contain pus and were removed on December 14th. There had been a slight albuminuria but after the removal of the tonsils no albumin was to be found. There had been no abnormal temperature and the patient felt well after the tonsillectomy. Two days before the tonsillectomy the hemorrhagic area was distinctly to be seen but now unless told that hemorrhage had been present none would be suspected. The edema was not nearly so marked as it had been a few days previously, and the "cherry-red spot" barely discernible. There has not been any return of vision.

Iridotaxis for Primary Glaucoma.

DR. THOMAS FAITH presented a patient on whom he had performed an iridotaxis for primary glaucoma.

The patient was a woman, aged 29 years, who consulted him in 1913 for primary glaucoma of both eyes. The right eye was very much the worse with vision something like 4/200. A trephining was done on the right eye some time in the fall of 1913 which apparently reduced the tension, but it was followed within a month or two by complete detachment of the retina. In February, 1914, the eye was enucleated on account of pain and increase in tension.

The left eye was kept within reasonable bounds of tension with eserine, but the strength of the solution had to be continually increased until in the fall of 1915 the case reached the point where the tension was not kept in check even with four grain to the ounce of eserine. It would be as high as 56, then go down to 40.

In January an iridotaxis was done. For five or six days the tension to fingers was

normal, and then went up. No eserine was used immediately following the operation but after a few days it was used and the tension immediately came down and has remained normal ever since. The patient has used no drops for many months, and the tension now is 15-20-25, whenever taken, vision 20/30. It will be two years in January, 1918, since the operation.

He felt that this operation accomplished one of the things wished for, and that was a new route for drainage, which was accomplished better than by trephining, and with much less subsequent danger of infection. We all know from experience that many patients have a prolapsed iris in case of injury, but secondary infection is rare. He had seen only one case of late secondary infection after iris prolapse. That was shown, a number of years ago, by Dr. Gradle, Sr., who had reported two cases of late secondary infection, in cases of prolapsed iris.

DISCUSSION.—Dr. Michael Goldenburg considered iridotaxis the most satisfactory operation for glaucoma that he had ever seen performed. The simplicity of it appealed to anyone. There was hardly any chance of doing harm and the fact that a definite communication was established between the anterior chamber and the subconjunctival space was a distinct advantage. The only question was, did the iris remain as a drain or did it fill up with connective tissue? The operation was at present too new for a definite statement to be made, and this could only be done when some of the eyes came to the pathologic laboratory. In his case the tension had been kept down all the time.

When the operation was first reported some time ago great stress was laid upon drawing the iris up into the wound, feeling that drawing the iris away from the limbus distended the spaces of Fontana so as to permit drainage. He questioned whether this had any real value. In Dr. Faith's case the iris was not stretched very much and in his case he had not done it because he could not see any particular advantage in doing so. He left the iris in the small opening of the limbus and the tension remained down. In this operation one did not get the large

bleb as in trephining, and that was where the late secondary infection came. He had seen two late secondary infections following a trephining operation, due to the bleb where the lid rode over it constantly and eroded the superficial epithelium.

Dr. John R. Hoffman said he did not see how the iridotasis could appeal to anyone. He thought the only operation of first consideration in glaucoma was a broad iridectomy, and could not see why the iridotasis was better.

Dr. Clark W. Hawley stated that he had been trying for the last year and a half to get away from mutilating the eye. The whole subject got down to what was the cause of glaucoma. He did not mean not to do an operation and the other things that had been done in the past for glaucoma, but the cause of glaucoma had never been established. The man who first brought the subject out had been thinking along the same line, but for several years and independent of him the speaker had been studying up what he thought was the cause for many of the cases, especially the inflammatory ones, and that was some phase of focal infection. The only phase which he had met with so far was autointoxication. He had under his care five cases of glaucoma; three of them his and one of his assistant's in which no operation had been done, and all had been cured so far. He had also one case of simple glaucoma which had been improved very much. That patient had been subjected to an iridectomy by a physician in New York, but this was without any benefit. The eyes now are both very much improved and the recurring attacks were further and further apart. He was convinced that the trouble came from some focal infection, producing an inflammation which might induce an inflammatory condition of the choroid, thus producing an extra exudate and then an overflow which could not be carried off.

Dr. Risley of Philadelphia had almost ceased doing iridectomy. The inflammatory glaucoma was much more susceptible to the treatment than the simple glaucoma. An operation might be beneficial in some cases because in doing a cutting operation the inflammatory condition

would be reduced. He did not believe that the operation in glaucoma opened up the canal but it was the influence of the operation on the connective tissue which was of benefit. These four cases had all been treated entirely without operations and some were over a year old.

Dr. W. A. Fisher agreed with Dr. Hawley concerning his treatment of washing the lower bowels. He was treating a case with eserine in the eye and rectal flushing, such as Dr. Hawley suggested some time ago, and was sure that the treatment was often effective. He also agreed with Dr. Hoffman that an iridectomy was the best operation for reducing tension, provided one could always make a good iridectomy; but many could not, especially if a very shallow anterior chamber was present. He had operated a great many times when the tension was not reduced, but believed the poor result was due to an improperly performed iridectomy and he believed that an iridectomy that was done properly usually accomplished the same work as trephining.

He considered Smith's iridectomy made with a narrow cataract knife, cutting upwards instead of downwards, the best operation, as also the simplest and easiest to perform. He also agreed with Dr. Faith that an iridotasis was a good operation and possibly the best one, especially for those who operate seldom and do not feel sure of a good iridectomy. He thought the principal thing to do was to get a deep iridectomy. Dr. Faith has a good result in the case he has presented which is convincing. He thoroughly believed with Dr. Hawley that it is most desirable to use enemas in all cases, no matter what method of operation was performed or what treatment was given.

Dr. Clark Hawley stated that twenty-two years previously he had removed the eye of a patient for a severe ophthalmia. One year ago she was taken with what she described as blind spells, coming at first once a week and later once a day. In January they were as frequent as twice a day, but absolutely nothing had been done. She did not come to him for treatment because she owed him a bill. When she did come her vision was 20/200. At that time he was treating two patients

with his elimination method and wished to see what this treatment would do in such a case as hers. He treated her for four or five days with rectal enemas and since then she had not a single attack of glaucoma; from the first night there had been no attack of inflammatory glaucoma. He thought it was far better to get at the cause of the disease and treat it than to operate. But he thought this treatment could not be carried out with cathartics. When the autointoxication was cured the patient got well.

Dr. Thomas Faith thought it would be an excellent idea to have a symposium on glaucoma. The case he reported as not an inflammatory or congestive glaucoma, but the simple primary form. The patient had only one eye. She had received citrat of soda injections, a la Fischer, and everything had been done that could be done, but she was losing her vision in spite of everything. The iridotaxis has kept her vision in spite of everything. He thought that the fact that there were so many different operations for glaucoma showed that there was no perfect one. In a simple glaucoma it was either a myotic or an operation, no matter what the cause was.

He had tried the suggestions made by Dr. Hawley on this patient, but he thought if this operation always established a new route for drainage it would be a successful operation. He thought pathologists would bear him out in saying that when good results were obtained from iridectomy it was because there was a filtering scar left. He could not share Dr. Hoffman's enthusiasm for the infallibility of iridectomy. He believed that trephining often relieved the tension but thought if there was no bleb there was no result. In one case of trephining of both eyes, that of a woman over sixty, who had gone along for two years without a secondary infection and with the tension normal, tension remained in proportion to the size of the bleb she had, which varied from time to time. In this case of iridotaxis there is a bleb surrounding the iris, not as large as you get with trephining but of good size, and when the bleb is larger the tension is lower.

Cataract Extractions.

DR. W. A. FISHER reported two cases

of lens extraction, one of which was cataracta nigra. The first was Mr. V., aged 57 years, whom he had operated on for cataract four weeks previously. The lens was removed without any complication and it proved to be a cataracta nigra. He naturally expected 20/20 vision because the lens was removed in capsule and there was no postoperative inflammation. The principal point he brought out was the existence of a sluggish pupil which was explained to the patient before operating. Another point was that the nerve head after operation appeared pale, as if he might have atrophy, but he did not know what a normal field was after a cataract operation. He thought it would be an important point to establish the normal field after a cataract operation, because if a field was contracted below this normal, one could distinguish an atrophy and be sure of it at once as easily as could be done if the lens was in the eye, but a standard must be first made.

The second case was a man, aged 70 years, who had come from a long distance, and did not have sufficient money to remain in the hospital a long time for treatment. The right lens was mature, the left vision 20/200. There was a dacryocystitis in the right eye and the left was clean. To have operated upon the right mature lens, it would have been imperative that the lacrimal sac be operated upon and free from bacteria before operating for cataract.

He prevailed upon the patient to have the clean eye operated upon as he could do it at once and not decrease his prospects of good vision. The left eye was operated five weeks previously and he now has 20/25. The lens was so large that it seemed impossible to remove it without danger and the needle was used to assist delivery. This ruptured the capsule but when the lens is pushed up into the opening and the needle is used even if the capsule ruptures, all of the cortical usually comes out. By removing the lens in capsule, it would seem that an immature cataract would be selected rather than a mature when the mature was complicated by a dacryocystitis and the immature clean. The lids were not opened in either of these cases until the ninth day

and neither of them had any postoperative inflammation.

Dr. Francis Lane thought that after the lens was extracted the iris did not hang forward but would drop down as a curtain because it had no support. It might cut off some of the peripheral field but still it would be functioning. It would be pushed back towards the center of the eyeball.

Dr. W. A. Fisher was pleased to know that Dr. Lane believed that after the lens was removed in capsule it did not draw up so high that the patient could not see at all, but instead dropped back. He considered the fields very important and stated that in a field taken from Mr. H., who had practically a normal eye with the lens removed, that the fields appeared to be contracted.

He had taken two fields, exhibiting chart, one with and the other without correction, and they were practically the same. In the other case, Mr. V., in which he suspected an atrophy because of the whitening of the nerve head, the fields were the same as in Mr. B.

Monocular Diplopia.

Dr. L. J. HUGHES reported a case of right monocular diplopia. The patient was a male, hunter, 57 years of age, who had complained for three or four years. In the right eye vision was 20/30 with correction; in the left 20/20 with correction. Examination of the right eye showed it to be normal so far as it could be made out; he only had the patient's word that he saw double. He claimed to have seen the gun barrel double. He had tried him with correction with no effect on the diplopia but a mydriatic removed the diplopia. He used this before he went hunting. Dr. Hughes thought it might be a case of hysteria; the patient claimed that objects changed their shape. When shooting at clay pigeons they might be horizontal at one point and vertical at another.

Dr. W. A. Fisher said that in his experience with injuries, the patient would occasionally complain among other things of double vision with the uninjured eye, but he believed the principal incentive was to make a better settlement for the injury. He could easily understand that candidates for the army or

navy might some times complain of double vision with one eye, but that would probably be for exemption. He did not believe one with a seeming normal eye as the one Dr. Hughes presented, could possibly have diplopia with one eye, and it must be a neurosis.

Dr. Clarence Loeb asked if the patient saw two objects side by side or one over the other.

Dr. Hughes, in replying to Dr. Loeb, said that he had to take the patient's word for it that he saw double at all, and he thought it might be psychic. He saw one image quite distinctly but the other was more like a shadow.

Dr. Thomas Faith thought it was an accepted fact that monocular diplopia must be due to something interfering with the lens or vitreous, or hysteria. He had seen one case of monocular triplopia.

Dr. Hughes stated that in a young woman of 25 years, following an attack of typhoid fever, there had been trouble with both eyes in which so many objects appeared, all horizontal, that she could not count them and they were always present, more or less oscillating. He could never find any pathologic lesions to account for it.

MAJOR H. WORTHINGTON,
Secretary.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

January 7, 1918.

Sarcoma of Orbit.

Dr. WM. CAMPBELL POSEY presented a case of sarcoma of the orbit in a man 54 years of age, who had been struck on the head and eye some 10 years previously by falling timber. The affected eye had been enucleated elsewhere some four years previously, perhaps for sarcoma of the choroid, though the cause of blindness in the organ and the reason for its removal were unobtainable. The recurrence of the growth in the orbit, if such was the sequence, presented an unusual form, the tumor appearing as a firm black rounded mass, which occupied the position of the eyeball and extended downwards and forwards, resembling in its posi-

tion and form a microphthalmic eye with attached cyst below. The mass was removed in toto by Dr. J. Milton Griscom in the absence of Dr. Posey, and the contents of the orbit eviscerated. Copious hemorrhage attended the operation and recurred at each dressing. Two weeks after the operation, the orbit was subjected to a thoro electrical dessication treatment by Dr. Clark, since which time the hemorrhages have ceased, and the orbit now shows signs of being filled in with newly formed tissue.

Optic Neuritis.

DR. POSEY presented a woman, aged 26, who had been married five years and had three children living and well, no miscarriages, with cerebral syphilis and marked papillitis in each eye. Vision was reduced in the right eye to 1/60 and in the left eye to 3/60. Fields of vision are concentrically contracted for form; colors not discernible. No symptoms present except intense headache and loss of vision, which had come on rapidly, but with interruptions of spells of apparently normal sight. Wassermann +, von Pirquet negative. Rapid improvement followed a rigorous course of mercurial inunctions, so that in four weeks there was a marked reduction in the papillitis and vision equalled 5/9 in each eye.

Salvarsan in Causation of Optic Neuritis.

DR. POSEY said that for a long time there was a general impression that Salvarsan acted deleteriously upon the tissues of the optic nerve, and especially in the presence of nonsyphilitic disease of the retina and optic nerve. Gibbard, however, who investigated this phase of the subject, observed but two cases of cerebro-nerve disease in 1,200 cases in which Salvarsan was used and an increase of dosage caused a disappearance of the trouble. Elliott, moreover, found that cases presenting signs of optic neuritis of presumably syphilitic origin act excellently in response to the drug. Further search of the literature also indicates that there is no ground for the belief that Salvarsan has a poisonous effect on any of the ocu-

lar tissues. Certainly all evidence is lacking that the drug causes atrophy of the optic nerve thru direct toxic effect. Dr. Posey said that from his own limited experience, it would appear that the toxic effects wrongly attributed to Salvarsan may be avoided by trusting the administration of the drug only to those who are properly trained, and that the combination of Salvarsan with Hg. and K. I. greatly augments the spirocheticidal properties of each of these specifics. In order to be efficient, Salvarsan should be administered early, before the spirochetes reach the vascular tissues, and before they have time to damage the delicate tissues of the eye. Later results are certainly less favorable, tho we have all seen gummata of various parts of the eye disappear under its use. Indeed, cases have been reported where Argyll-Robertson pupils have reacted again to light following intravenous injections of the drug.

Dr. Posey referred to Knapp's paper read before the American Ophthalmological Society in 1916, in which the author lauded the employment of Salvarsan in eye syphilis. The author gives his patients mercury by inunction once or twice daily, small doses of K. I., and Neosalvarsan in five one-half doses at three day intervals; then after two weeks, Salvarsan is given in one-half doses every three days for five times. The Hg. and K. I. were then continued. Knapp states that the Wassermann test did not help him in determining the effect of the treatment, as in all of these cases it remained strongly positive, as has been the experience of all laboratories. He employed intraspinal treatment with salvarsanized serum in order to bring the agent into close contact with the diseased tissues in five cases of optic atrophy, but in one only was there any improvement.

A paper by Fordyce of New York, read in Philadelphia last year, was commented upon by Dr. Posey and his conclusions quoted as follows: "Optic atrophy with a high cell count, positive Wassermann and a luetic curve, offers favorable conditions for treatment, as is evidenced by the fact that cases have been stationary for two years with negative findings after treatment, and with visual

fields enlarged or stationary." On the other hand, he believes that optic atrophy with negative fluid findings offers no indication for intraspinal treatment.

Fordyce insists that every case of secondary syphilis as a matter of routine should have an ophthalmoscopic examination from time to time. Marked evidence of pathologic changes may be present with slight subjective symptoms or impairment of vision, and the condition may be completely overlooked unless one is on the alert for the possibilities in these cases.

Magnet Extraction.

DR. FRANK C. PARKER presented an interesting case of magnet extraction in a man about 25 years of age. The patient presented himself in Dr. Posey's clinic, with a history of having been struck in the right eye by a foreign body while using a hammer, twenty-four hours before admission. External examination showed only a small elevation of the limbal tissues up and in, resembling a very small pinguecula. A faint pink flush over this spot was the only visible discoloration. The iris was drawn slightly toward the seat of injury. Tension normal. No pain. Vision but slightly impaired. Ophthalmoscopic examination disclosed a glistening black foreign body, up and in, and posterior to the lens margin. It floated freely in the anterior vitreous.

It was decided to apply a magnet at once, the blunt tip of the Parker magnet being held directly over the projection at the limbus. Upon turning on the current a small foreign body immediately dislodged itself from the limbal thickening and attached itself to the magnet. The ease with which the foreign body had been removed led to the suspicion that possibly all was not well. A second examination with the ophthalmoscope showed the original foreign body occupying its former position. While viewing the foreign body the magnet was turned on and off several times. Each time the current was turned on, the particle could be seen to jump toward the magnet and then fall back to its original position. It appeared to slide back and forth in a minute canal in the vitreous, produced

at the time of the injury. At no time did the body appear to change its position save when the current was turned on. Had the vitreous been fluid, conditions would probably have been different.

Attempts were made to draw the fragment through the pectinate ligament, behind the iris and thru the pupil, but the bulk was too small to offer sufficient attraction to overcome the resistance of a healthy ligament. Therefore a posterior sclerotomy was done and the fragment extracted with ease. Two weeks later vision = 6/9.

Glaucoma Trephining.

DR. WM. ZENTMAYER presented a case of glaucoma treated by the trephining operation. The patient, a laboring man, 47 years of age, discovered in January, 1915, that on closing the left eye he could not read. He recalled that during the previous summer there was a blurring of the right eye and that it was somewhat congested, but not painful.

The right eye was operated upon by Dr. Hardy of St. Louis, in April, 1915, who did a trephine operation. The patient thinks that vision was not improved thereby. For two years past he has seen halos with the left eye. He was first seen by me in March, 1916. At that time the vision in the right eye was 20/40, and in the left eye 20/20.

Fields: Right eye, a triangular sector, apex at fixation and 60° wide at its temporal base. Left eye, almost a nasal hemianopsia with fixation preserved.

The right eye showed a filtration area including the whole conjunctival flap, over which the conjunctiva seemed thin. T. = 13 mm. There was a small basal iridectomy. Papilla partly atrophic with a very deep pathologic cup. Left eye T. = 39 mm., papilla gray, deep pathologic cup. He was given pilocarpin and was not seen again for one year, when vision and fields were about the same.

He was again seen in December, 1917, when he stated that for the past three months there had been a fog before the left eye which by noon each day became so dense that he had to depend upon his right eye. On examination the left eye showed a hazy cornea, pupil partly dilated, and a tension of 53 mm. Right eye,

tension 12 mm. The field of left eye was contracted to a narrow trowel-shaped area extending from 5° on nasal side to 60° on temporal side and widest dimension of 25° near fixation point.

On December 15, 1917, the left eye was trephined and a basal iridectomy secured. There was considerable reaction. At the end of the second week V. = 15/20, and the field had increased about 10°.

The case was exhibited particularly to illustrate the course of a case in which a classical operation and operative result had been obtained almost two years before. The central vision has held up well but the field is gradually contracting. Tension is normal and there is a large filtration bleb.

HAROLD W. HOW;
Secretary.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

November 15, 1917.

DR. S. LEWIS ZIEGLER, Temporary
Chairman.

Nodular Degeneration of Cornea.

DR. WILLIAM ZENTMAYER presented a patient who was a married woman of Polish birth. The history of the case was difficult to get, but it would seem that the vision began to fail soon after the birth of her first child, four years ago. She had a second child, about two years ago, and since then there has been a further, more rapid loss of vision. No knowledge of injury or severe inflammatory symptoms.

In the right eye there was an irregular horizontal sigmoid opacity, measuring 1.5 by 4 mm. in the center of the cornea. This was surrounded by many small round or nearly round dots, measuring about 0.5 mm. in diameter, arranged in an irregular circle about the larger opacity. The intervening spaces and the rest of the cornea were studded with pin point opacities. The location of the opacities was sub-epithelial, but only in one or two places was the epithelium distinctly elevated.

In the left eye the opacities were of a more uniform size, and there was a distinct tendency to whorl arrangement. Their color was a dark gray.

In both eyes the retinal vessels, especially the veins, were distinctly engorged. There were no external signs of congestion.

The Wassermann test made last spring in the service of Dr. Chance, and recently again in Dr. Zentmayer's service, was negative. The von Pirquet was slightly positive. There was nothing relative in the family history.

Historical Sketch.

DR. S. D. RISLEY presented a valuable and interesting historical review of the "Rise and Progress of Ophthalmology in Philadelphia." (See p. 28.)

Injury to Eyes from Lightning Stroke.

This paper by DR. WILLIAM CAMPBELL POSEY has been printed in full, p. 88.

Bilateral Coloboma of the Lid.

DR. WILLIAM CAMPBELL POSEY presented a case of bilateral coloboma of the lower lid associated with malformation of both superior maxillary bones. The defect in the right eye had been corrected by sewing together the edges of the coloboma. In the left eye, however, the coloboma had involved practically the entire inner half of the lid. The gap was filled in with a flap taken from the root of the nose. An associated pulling up of the right side of the mouth had been corrected by a plastic operation by Dr. J. B. Roberts.

A Case of Epicanthus.

DR. POSEY showed 2 cases of a curious elongation of the inner halves of the upper and lower lids of both eyes in Italian children, associated with other signs of retarded physical development, small upper extremities, deafness, malformation of the skulls, etc. Dr. Posey had operated on the older child, removing the right lacrimal sac, which was the seat of an abscess, and prolonging the palpebral fissure inward by notching the weblike fold of skin which united the lids in that position.

Synchronous Movements of Lid and Jaw.

DR. POSEY showed a case of synchronous movements of the jaw and upper lid of the right eye associated with divergence of the eye. The lid had been raised by a Hunt-Tansley operation and the internal rectus advanced. The ptosis being only partially corrected as a result of the first operation, a Hess procedure had been done later. The cosmetic result is now good.

Results of Operation for Mucocoele of Frontal and Ethmoidal Cells.

DR. POSEY also exhibited a case showing excellent cosmetic and visual results a year after operation on a case of extensive mucocoele of the frontal and ethmoidal cells.

Superficial Punctate Keratitis.

DR. SIDNEY L. OLSHO, by invitation, presented a patient, P. L., white, carpenter, aged 22 years, who showed numerous typical punctate opacities restricted to the central portions of both corneae and without any other signs of

inflammation. The disease was of four years' standing and seemed not to yield to treatment. The symptoms fluctuated in intensity and at times were almost absent. The patient was in robust health, but had a quiescent infiltration at the right apex. The upper respiratory tract was normal excepting for a slight deviation of the septum. Two of his three brothers and one of his six sisters had psoriasis.

DISCUSSION.—Dr. Zentmayer said that one point of interest in Dr. Olsho's case was its persistence, as in the several cases he had seen it had run a course of a few weeks or months. In nearly every instance there had been present, or there was a recent history of, a catarrh of the upper respiratory tract. He had found holocain to be of value.

He asked whether the collection of the leucocyte or of lymphoid cells was not also a finding in ordinary phlyctenular keratitis, which at present, at least, was not considered of neuropathic origin.

J. MILTON GRISCOM, Clerk.

American Journal of Ophthalmology

Series 3, Vol. 1, No. 3.

March, 1918.

PUBLISHED MONTHLY BY THE OPHTHALMIC PUBLISHING COMPANY

EDITORIAL STAFF

ADOLF ALT,
Metropolitan Bldg., St. Louis, Mo.

M. URIBE TRONCOSO,
143 W. 92nd St., New York City.

MEYER WIENER,
Carleton Bldg., St. Louis, Mo.

CASEY A. WOOD,
War Department, Washington, D. C.

HARRY V. WÜRDEMANN,
Cobb Bldg., Seattle, Washington.

EDWARD JACKSON, *Editor*,
318 Majestic Bldg., Denver, Colo.

CLARENCE LOEB, *Associate Editor*,
25 E. Washington St., Chicago, Ill.

Original papers and books for review may be sent to any member of the editorial staff. Reports of society proceedings, correspondence, and other scientific communications should be addressed to the Editor.

Proof should be corrected and returned within forty-eight hours to the Associate Editor. Reprints may be obtained from the printers, Tucker-Kenworthy Co., 501 S. La Salle St., Chicago, Ill., if ordered at the time proofs are returned.

Subscriptions, applications for single copies, communications with reference to advertising or other business, should be addressed to

H. A. FOX, Manager, 7 West Madison St., Chicago, Ill.

EDITORIALS.

THE OPHTHALMIC RECORD IN CHICAGO.

Following the regime of Dr. George C. Savage, the place of publication was changed to Chicago in the year 1896. Casey A. Wood became editor-in-chief and with him were associated Drs. Geo. E. de Schweinitz, W. E. Hopkins, G. C. Savage, John E. Weeks, F. C. Hotz, H. V. Würdemann, Harold Gifford, Edward Jackson and Frank Allport, acting as an editorial board. Others who were at this time associated in the publication of the "Record" were: Francis Valk, New York; A. W. Calhoun, Atlanta, Ga.; A. A. Hubbell, Buffalo; F. B. Eaton, San Jose, Calif.; J. W. Stirling, Montreal, Canada; Melville Black, Denver; Wm. Dudley Hall, Buffalo.

Dr. Thomas A. Woodruff acted as editorial secretary from 1897 to 1913. Dr. Thomas Hall Shastid from May, 1913, to December, 1913, and Dr. Frank Brawley from December, 1913, until the merger January 1, 1918.

The sphere the "Record" was to occupy in American Ophthalmology was determined at this time, namely to give to the profession a monthly journal which would appeal to the practical, everyday side of ophthalmology. This idea was carried out to the last issue and, emphasized with plentiful illustrations, resulted in the development of a popular journal with a subscription list of more than fifteen hundred physicians in this country and abroad.

The first Chicago office was located in the High Building, opposite the post office on Adams street, where C. C. Clute acted as publisher and business manager. This position he held until his death in 1905, when he was succeeded by H. A. Fox, who continued in charge until the merger into the new AMERICAN JOURNAL OF OPHTHALMOLOGY, and who is now associated with the new journal in the business department.

A very useful feature was incorporated in the "Record" in 1907, viz., the

table of Hospital and Teaching Clinics, published on its fifty-fourth page each month.

In addition to short practical articles, in later years, original articles presenting the purely scientific aspects of ophthalmology, were occasionally published, such as those on physiologic optics by Chas. F. Prentice, M. E., of New York.

The illustration of original articles with cuts and halftones was also encouraged and, when possible, special illustrations were done in colors.

One department in the "Ophthalmic Record" was devoted to reports of the various ophthalmologic societies, notably, the Ophthalmic Section of the Royal Society of Medicine, Section of Ophthalmology of the College of Physicians of Philadelphia, Chicago Ophthalmological Society, Colorado Ophthalmological Society, Wills Hospital Ophthalmic Society, Philadelphia Polyclinic Ophthalmic Society, Section on Ophthalmology of the A. M. A., Ophthalmological Society of the United Kingdom, etc.

Another valuable department was that known as "News and Notes," which was presided over at various times by Frank Allport, Frank Brawley, Emory Hill, and Chas. P. Small.

At the conclusion of its career the names of those still actively interested in the "Record" were: Editors, Casey A. Wood, Chicago; G. C. Savage, Nashville, Tenn.; Geo. E. de Schweinitz, Philadelphia, Pa.; John E. Weeks, New York; Edward Jackson, Denver, Colorado; H. V. Würdemann, Seattle, Wash.; Frank Allport, Chicago; Harold Gifford, Omaha, Neb.; Editorial Secretary, Frank Brawley, Chicago.

The collaborators were: Francis Valk, New York; F. B. Eaton, San Francisco, Cal.; E. C. Ellett, Memphis, Tenn.; C. Devereux Marshall, F. R. C. S., London, England; W. Gordon M. Byers, Montreal, Canada; Emory Hill, Chicago; Hans Barkan, San Francisco, Calif.; Melville Black, Denver, Colo.; Robert L. Randolph, Baltimore, Md.; Edward Stieren, Pittsburgh, Pa.; Clarence A. Veasey, Spokane, Wash.; E. A. Shumway, Philadelphia, Pa.; James W. Barrett, Melbourne, Australia; Frank

C. Todd, Minneapolis, Minn.; Nelson Miles Black, Milwaukee; Prof. Cirincione, Rome, Italy.

Having fulfilled its mission, the "Ophthalmic Record" is proud to submerge its identity and to bring its resources to the support of the new AMERICAN JOURNAL OF OPHTHALMOLOGY.

F. B.

ANALES DE OFTALMOLOGIA.

This journal was founded July, 1898, by M. Uribe Troncoso, with the co-operation of Daniel M. Velez, in the City of Mexico. At that time there were no ophthalmologic journals published in Spanish either in Spain or Latin America. Two special publications issued in Spain some years before had to be discontinued after a short period. All ophthalmologic papers in Spanish were scattered in the medical journals, making them difficult to locate and allowing some important papers to go unnoticed.

The principal aims of the *Anales de Oftalmologia* were to create a common channel of publicity for Mexican, Spanish and South American ophthalmologists, to stimulate scientific activity among them and to promote a wider and better knowledge of their respective work. The *Anales* secured the co-operation of such men as Dr. J. Santos Fernandez of Havana, Dr. C. A. Oliver of Philadelphia, Dr. L. Demichieri of Montevideo, Dr. Wernicke of Buenos Aires, and Dr. P. de Obarrio of Guayaquil, Ecuador. This journal was assisted at first in a financial way by a subsidy from the Government of Mexico under the form of free printing in one of the government printing houses, the cost of paper, cuts, etc., being nevertheless paid by the publisher.

In addition to original articles, the *Anales* began to publish complete reviews of the world's most important ophthalmologic literature, reports of societies, items of interest, etc. American ophthalmology was well represented by monthly abstracts and reviews from Dr. C. A. Oliver, assisted by Dr. Burton K. Chance, which certainly contributed a good deal to make it known amongst

Spanish speaking oculists, to whom the English language was not familiar.

Two years afterwards the *Anales* were widely known. Professor Hirschberg asked Dr. Wernicke to make abstracts for the *Centralblatt für praktische Augenheilkunde*, and French, English and American journals published abstracts of its most important original articles. About this period Dr. Menacho of Barcelona and Dr. J. Santos Fernandez of Havana, believing the circulation of the *Anales* was insufficient in Spain, conceived the idea of transferring the journal to Madrid, another reason also being that Spain, as the mother country of Latin America, could obtain better support for the journal.

Dr. Uribe Troncoso, however, after due consideration of the matter, did not agree to the proposal, being of the opinion that the *Anales* could do better work for Mexico and Latin America by remaining in Mexico, and also on account of the numerous connections and obligations established. Drs. Menacho and Santos Fernandez then started the *Archivos de Oftalmologia Hispano Americanos*, first in Madrid and then in Barcelona.

The old Mexican Ophthalmological Society, founded about the year 1892, was reorganized in 1901 and all its papers and proceedings were afterwards published in the *Anales*. An annual meeting was added in 1903 to the monthly sessions in order to convene ophthalmologists from all over the country and the journal was then of great assistance, not only for the announcement of the meetings but also in the publication of the society proceedings that were made from reprints of the journal at a very small cost. Galley proofs of the proceedings were also sent to many ophthalmologic journals, which published them in full.

In the small and sparsely settled towns of many Mexican states, eye specialists are totally lacking. The result is that such common diseases as ophthalmia neonatorum, iritis, glaucoma, etc., go untreated, or ill treated, and blindness is very frequent. Having in view the diffusion of ophthalmologic knowledge, the *Anales* undertook, in a special section, the publication of clear, precise and

practical articles, dealing with the most important ophthalmic subjects, that should appeal to the general practitioner much more than the elaborated and highly technical articles for eye specialists. In 1913, even a small book by A. Cantonnet was published in several numbers under the form of an appendix, entitled "Ophthalmology for the General Practitioner." Copies of the *Anales* were sent to a large number of general practitioners all over the country.

In 1899 the editor started an editorial campaign calling the attention of the government of Mexico to the need of a systematic examination of the eyes of railroad employes engaged in the moving of trains; and in 1900, when the Section on Ophthalmology of the American Medical Association through a special committee settled the rules and regulations to which the examinations must conform, Dr. Uribe Troncoso again took the matter in hand and obtained the incorporation in the new "Rules and Regulations for the Mexican Railroads" of some provisions for compulsory examination of the eyes of these employes.

Many important topics of school hygiene were also treated in the *Anales*, which warmly supported the movement for systematic examination of the eyes of school children.

On the tenth anniversary of its foundation a special number was published, which contained the opinions of many oculists concerning the past policy of the journal, and suggestions with regard to its future.

During seventeen years the *Anales* kept its standard, struggling with success against material difficulties and scanty support. In fact, it was the only special journal published in Mexico; no other department of medicine being represented in the medical press, outside of the general medical publications.

In 1913 the life of the journal was endangered by the revolution; the cost of the paper and other supplies became excessive; the number of subscribers diminished to a great extent on account of the suspension of postal money collections and the unfortunate condition of the country. For two years the *Anales* were published with great irregularity,

struggling against very adverse conditions. The last number closed the Volume V, when its chief editor decided to transfer his activities to New York City. M. URIBE TRONCOSO.

OPHTHALMOLOGY—1904-1917.

The year 1904 saw most medical journals of America in the hands of lay publishers, whose policies were not quite in accordance with the ethical and scientific demands of the medical profession. From this time on there has been a great improvement in these conditions, and most of the journals have come under full direction of the medical men and have more than filled their demands. Therefore, some years ago, a movement arose, gradually growing in force, towards more full efficiency, which in the case of the Ophthalmic Journals of America, has been met by the amalgamation of a number of them into our new AMERICAN JOURNAL OF OPHTHALMOLOGY.

The conditions in 1904 were such that a number of medical editors and writers on ophthalmic subjects considered it wise at that time to start a journal which should be as nearly as possible a record of recent progress of ophthalmology, giving more full abstracts and more complete reviews than had hitherto been attempted, at the same time accepting for the department of original essays only those of distinct scientific value. At that time an arrangement was entered into with the *Ophthalmic Record* whereby the two journals would be published more or less under the same direction, an attempt being made to completely cover the whole field of ophthalmic literature.

The then new journal *Ophthalmology* restricted its printed matter to essays, abstracts and reviews, being published as a quarterly; while the *Record* took all the editorials and the news items in addition to essays. The first number appeared in October, 1904, with the following staff: H. V. Würdemann, managing editor and publisher; Nelson M. Black, assistant editor; Casey A. Wood, Chicago; Charles H. May, New York City; Charles H. Oliver, Philadelphia; Albert B. Hale, Chicago; Charles Zimmermann, Mil-

waukee; Wm. Zentmayer, Philadelphia; Blencowe E. Fryer, Kansas City; J. Guttman, New York City; Frank Allport, Chicago; Edmond E. Blaauw, Buffalo; Mitsiyasu Inouye, Tokio; M. Wicherkiewicz, Cracow; and Claud Worth, London.

Changes were made from time to time, owing to the loss by death, removal to other countries, or by the exigencies of the work, until with the last issue the journal was published under the auspices of the following: H. V. Würdemann, managing editor and publisher; Charles H. May, New York City; A. A. Bradburne, Manchester; William R. Murray, Minneapolis; Melville Black, Denver; G. I. Hogue, Milwaukee; S. Z. Shope, Harrisburg; Fred Tooke, Montreal; E. P. Maynard, Calcutta; K. W. Majewski, Cracow; Edmund Jensen, Copenhagen; Casey A. Wood, Chicago; Charles Zimmermann, Milwaukee; L. Webster Fox, Philadelphia; S. Lewis Ziegler, Philadelphia; George W. Swift, Seattle; J. Franklin Chattin, Newark; John M. Wheeler, New York City; Harry S. Gradle, Chicago; Victor M. Lucchetti, San Francisco; Edmond E. Blaauw, Buffalo; J. Guttman, New York; Marcel Danis, Brussels; Marc Landolt, Paris; Cirincione, Rome; M. Uribe y Troncoso, New York; Jose de J. Gonzalez, Leon, Mexico; Francisco M. Fernandez, Havana; Julius Fejer, Budapest; and S. Komoto, Tokio.

Of those whom we have lost by death may be mentioned Blencowe E. Fryer, Kansas City; George C. Harlan, Philadelphia; M. Wicherkerwicz, Cracow; Charles A. Oliver, Philadelphia; Mark W. Stevenson, Akron, Ohio; and Chas. H. Beard, Chicago, all of whom were active in writing for this journal. Of those connected with its editorial department upon its fusion with the AMERICAN JOURNAL OF OPHTHALMOLOGY, there will be found a number who were with us from its birth and we have noted with excess of pride that nearly all of our former editorial staff were chosen and have accepted positions on the new journal.

Ophthalmology lived under this name for thirteen years, and still exists; we hope will continue to live for many many

decades in the AMERICAN JOURNAL OF OPHTHALMOLOGY, now owned and published by and for the profession.

HARRY VANDERBILT WÜRDEMANN.

THE OPHTHALMIC YEAR BOOK AND OPHTHALMIC LITERATURE.

The great amount of the ophthalmic literature of the world compared with the small part of it that was generally accessible to the American ophthalmologist, suggested the need of a new attempt in the field of review literature. The review departments of journals, and the ophthalmic part of medical year-books touched only a small part of the world's literature; and up to that time, the systematic arrangement of the material presented was greatly neglected.

The decision to publish a year book was reached in June, 1903, and the first volume appeared in May, 1904. By the latter date, two new journals, the *Ophthalmoscope* and *Ophthalmology*, had appeared. These both showed an advance on the older journals in the system of arranging their review departments, but left much to be desired as works of reference through which the student could get in touch with everything important that had been written with regard to any particular subject. To meet the need of a publication that should unite and organize the great scattered, unrelated mass of the literature of ophthalmology, the *Ophthalmic Year Book* was started.

The first volume, containing 250 pages, was prepared wholly by the writer. For the second and third volumes, George E. de Schweinitz helped; and for the fourth volume, the aid of Theodore B. Schneideman was secured. These colleagues not only worked to sustain and advance the standard of thoroughness and literary excellence set for the *Year Book*; they also shared equally in the cost of printing the volume after it was prepared.

In the preparation of these earlier volumes, much valuable assistance was given by the late Edmund W. Stevens, George F. Libby, Frederick A. Davis,

Edward A. Shumway, and F. Mayo Schneideman.

In volume eight, William Zentmayer took the place of Dr. de Schweinitz, and beginning with volume nine, Wm. H. Crisp actively participated in the work. For volume ten, Casey A. Wood, Wendell Reber, Harry S. Gradle, Robert Henry Elliot of London, H. Aufmwaser, and Meyer Wiener became collaborators; and since then Will Walter, Florence Mayo Schneideman, Nelson M. Black, Chas. Zimmermann, Thos. B. Holloway, D. Forest Harbridge, Chas. P. Small, Emory Hill, Wm. C. Finnoff, Marcus Feingold, and M. Uribe Troncoso have taken up the preparation of parts of the Digest of the Literature. All of these who are living have become collaborators in the AMERICAN JOURNAL OF OPHTHALMOLOGY.

With such added assistance, the literature of the world was more and more thoroughly searched, and the resulting volumes grew in size, until in 1914 the maximum was reached, 545 pages. Since the beginning of the world war, the amount of the current literature of ophthalmology has declined, and the size of the annual volume has slightly diminished.

For volume eight, the financial burden was assumed entirely by the Editor, but it continued heavy, although the price of the volume had been raised from two to five dollars. But for the subsequent volumes, the contributors to the Knapp Testimonial Fund, became in effect subscribers to the volume. The price was raised to ten dollars per year, and the increased income thus provided has been sufficient to pay for the printing and distribution of the volume, although never for all the cost of preparation.

In preparing the Digest of the Literature for the Year Book, care was always necessary to avoid duplication of matter; and as the number of collaborators increased, the difficulty of doing this became greater. This led to the working out of a plan to prepare from month to month a classified list of papers that had been published, through which each collaborator on the Year Book could be informed of the literature belonging to his special department. It was also seen that

such lists would be of high value to every student of the literature of ophthalmology; and when the plan had been thought out, it was laid before those most likely to be interested in it, and the support offered justified the publication of such lists in the form of a monthly journal of *Ophthalmic Literature*.

Applying the results of experience with the Year Book, the price of this journal was placed at five dollars per year from the start and from the first the subscriptions paid for the printing, while the preparation of the lists was but little more than had to be done for the Year Book. With this support, it was possible to afford the American Academy of Ophthalmology and Oto-Laryngology the opportunity of supplying its members with this journal at a very moderate price; and in this way, *Ophthalmic Literature* obtained a wide circulation for such a special journal. To the lists men-

tioned were added abstracts of articles, book notices, and editorial discussions of topics bearing on the literature of ophthalmology and proper training for ophthalmic practice; but the essential part of the journal was its index of current publications.

While the *Year Book* and *Ophthalmic Literature* cease their separate existence, everything of value about them will continue in the new AMERICAN JOURNAL OF OPHTHALMOLOGY. The Digest of Literature will be continued in the same form and prepared by the same writers, except as these have been drawn from this duty to take up the military service of a greater cause. The "Index" prepared under the same supervision will appear each month, covering the literature of the month preceding. The continuity of this literature is unbroken.

EDWARD JACKSON.

BOOK NOTICES.

MEDICAL OPHTHALMOLOGY,

Arnold Knapp, M. D., New York City, Professor of Ophthalmology, Columbia University, Executive Surgeon Herman Knapp Memorial Eye Hospital. A volume in an International System of Ophthalmic Practice, edited by Walter L. Pyle, M. D. 8vo, 525 pages, 32 illustrations. Philadelphia: P. Blakiston's Son and Company, 1918. Price \$4.00.

Not for years has the reviewer taken a greater interest nor has he gained more solid information from any text book dealing with Ophthalmology than he has from this new work.

The "Bandwurm periode" of Graefe-Saemisch-Hess, Lewandowsky, Henschen, Wilbrand and Sanger, et al.; the snappy but yet brilliant reasonings of de Lapersonne et Cantonnet and the sometimes dry as dust "Transactions" have been translated into understandable American-English so that tho the work takes all of 480 pages, each subject, aye, even each sentence, is so succinct and yet so descriptive that the idea is irresistibly indented into the reader's cerebral cells.

"The Ophthalmologic relations, closer or remote, with every branch of medicine and surgery; indeed, with almost every branch of science," are well exploited therein. Of particular value to the advanced student and to the consultant are the explanations of the Author in the anatomic and physiologic chapters; almost every paragraph dealing with pathology points out the *raison d'être*. "And now remains—that we find out the cause of this effect, or rather say, the cause of this defect, for this effect defective comes by cause" (Hamlet). The Author has well correlated the general causes of ophthalmic disease as well as their relations as symptom complexes of general affections.

Indeed, the reviewer is so enthused over this book that he finds it difficult to deliver a satisfactory resumé within our limits, in other than glittering generalities or by a dry syllabus, which might be sufficiently descriptive to acquaint a prospective purchaser of its contents.

If for nothing but the clear descriptions of anatomy and diagnostic pathology, the book would be well worth

while; but it is likewise welcomed for the master touch and teaching of its Author, whose personal experience and reasoning is shown in almost every page.

The principal headings are Anatomy and Physiology, Disease of the Nervous System, Glands with Internal Secretion, Poisons, Infectious Diseases, Circulation, Respiratory and Digestive Tracts, Kidneys, Anemia, Diabetes, Female Generative Organs, Osseous System, Skin Diseases and Hereditary Affections.

The thirty-two illustrations are all diagrammatic, relating to the anatomy and physiology. It is a fitting companion to others of the series by Darier, Beard, Collins and Mayou, Holmes, Pyle and Lancaster. Well edited, printed and bound, it merits a place at the right hand of every well versed physician and surgeon.

H. V. W.

The division of medical practice into definite specialties renders necessary a new class of literature to bridge the gaps between the works that belong distinctively to one specialty or another. This borderline literature is required to unite the different branches of the medical science; and to broaden the grasp on their own work, of those who specialize in practice. The wide relations of eye lesions to general pathologic processes, and the importance of the eye in general medical diagnosis, as well as the peculiarly complete and general specialization of ophthalmic practice, render this kind of literature especially important with regard to ophthalmology and its relations to general medicine.

Some appreciation of the importance of this class of literature has been reflected in the numerous journal articles that have appeared of late years regarding the eye and general diseases. Many of the recent text books on ophthalmology have chapters devoted to this subject. There have been important monographs written on certain phases of it, like medical ophthalmoscopy, toxic amblyopias, the general effects of eye strain, or the ocular affections arising from diseases of the nose and nasal accessory sinus. But until this time, no book has been produced in the English language

covering the whole of this important subject.

Knapp's work, therefore, appears in an unoccupied field, where something of the kind was needed. Moreover, it is well written. The facts regarding each topic are selected with sound judgment as to their relative importance, and they are stated clearly and succinctly. There is an absence of "padding" throughout. The only thing about the work that might be regarded as extraneous to its subject is the part (80 pages) given over to introductory anatomy, but this part is greatly needed by most ophthalmologists. It deals not with the anatomy of the eyeball, but with the anatomy and physiology of that part of the nervous system concerned directly or secondarily with the act of vision. Following it come 116 pages devoted to Diseases of the Nervous System.

The main headings under which the subject matter is considered have already been mentioned in the preceding notice. These sections vary greatly in length. That on Infectious Diseases, including of course syphilis and tuberculosis, occupies over one hundred pages; that on the Osseous System, only four. The illustrations are all used in the first section on anatomy. They are diagrams that greatly assist in elucidating the subject.

As a piece of book printing and binding, Knapp's Medical Ophthalmology is well done. In style, it conforms to others of the same series. Paper and typography are good. It has a complete table of contents, and full indexes of authors cited and of subjects.

Every ophthalmologist in active practice needs this work. There is nothing to take its place. It will be equally valuable to those who do not treat eye diseases, but who wish to be ready to recognize eye lesions attending the diseases they do have to deal with. It should find a wide circle of readers, and add much to the ability of the medical profession to deal with the eye lesions that arise in connection with general or extraocular diseases.

Its wise selection of facts, clearness and condensation, make it preëminently a desirable book for the practitioner. For the student of literature, it is less

satisfactory. The reading on which it is based has not been broad enough to make it quite complete. Generally the best papers and monographs have been consulted, but their deficiencies have not always been made good by wider studies. The German monographs in the "Graefe-Saemische-Hess Handbuch" and Lewandowsky's "Handbuch der Neurologie" are amply represented (of 393 citations, 237 are from German works); and the work of Nettleship on Hereditary Diseases is fully recognized. But some other important sources of material, appropriate to this book, are not represented. Probably in this way have arisen certain omissions which should not appear in another edition, that will doubtless soon be called for. Blastomycosis is more important to the American practitioner than leprosy. Congenital word blindness will as often come to the ophthalmologist as the acquired form of alexia, and will be more likely to pass unrecognized. Miner's nystagmus is as worthy of mention here as the vestibular or hereditary form. The general effects of eyestrain have been extravagantly exploited, but it would be appropriate to give them a brief, carefully considered statement in such a work.

E. J.

EYE HAZARDS IN INDUSTRIAL OCCUPATIONS.

Gordon L. Berry, Field Secretary, National Committee for the Prevention of Blindness, with the Co-operation of **Lieut. Thomas P. Bradshaw**, U. S. Army, formerly Technical Assistant to the Director of the American Museum of Safety. No. 12. 8vo. 145 pp. November, 1917. New York City. Price \$0.50.

This is largely a survey of the representative industries in the City of Buffalo made by the National Committee. Starting with this as a basis, an endeavor was made to cover practically the entire field of hazards to the eye in Industrial accidents in the United States, but I do not note therein the occupation of Ship Building, to which my attention has more recently been called by the enormous development of this industry in Seattle and the cities of Puget Sound. Likewise the lumber industry, which is of very great extent here, had not been particularly

touched upon. The former, however, has been well cared for by the Author in his citations regarding the steel and machinery trades. Both of these are subject to somewhat unusual and perhaps more gross injuries of the eye and head than those of some other workers, from the extent to which the workmen are subjected by reason of tumbling from heights, and the falling of more or less heavy objects from above.

Be this as it may, the pamphlet has well covered the subject. The Buffalo inquiry comprises 70 plants employing 35,000 workers. Stone, clay, glass products; brass, copper, aluminum; gold, silver, and precious stones; sheet iron works; hardware, castings, forgings, etc.; machinery; instruments and electric apparatus; carriages and automobiles; car and railway repair shops; paper and paper goods; pianos, organs and other musical instruments; boots and shoes; miscellaneous leather and canvas goods; rubber goods; buttons, paints, etc., chemicals, oils, paints, etc.; women's garments and furnishings; beverages; textiles.

Inspection of each shop was carried out and the care and efficiency of some protective devices which had been provided were studied. The attitude of employer and workmen and their opinions were obtained. Following inspection of each plant, a conference was held with the officials in charge and suggestions and criticisms were made for the betterment of the plant conditions.

During the year 1913 there were approximately 25,000 fatal accidents, 300,000 serious injuries and 2,000,000 other injuries to workmen in the United States. For the year 1916 there was a reduction of about 12.3 per cent in fatal industrial accidents frequency, and reduction of about 28 per cent of serious cases; and the same may be held for the year 1917 despite the great activity of the iron and steel trades.

The following statement reports eye accidents for the 12 months previous to June, 1917. There were 710,571 industrial accidents, of which 59,436 were to the eye, showing approximately 8.3 per cent. Another estimate gives the following:

1. Of the 2,000,000 annual nonfatal accidents, probably 200,000 are accidents to the eyes.

2. Approximately 15,000 persons in the United States are blind today as the result of accidental injury in industrial occupations.

3. The maintenance of these blinded artisans during the remainder of their lives will cost nearly ten million dollars, which expense will fall in large part on relatives, the community or state.

4. The actual economic loss cannot be estimated, and the loss to the unfortunate person whose eyesight is destroyed is least of all, a matter of dollars and cents. From these statements is it not apparent that one of the most important industrial problems of today is that of the protection of employes from accidents that will destroy or greatly impair vision?

The book goes on to describe the conditions under which accidents have been suffered and is replete with illustrations. It pays further attention to the safety movement which has resulted in reducing industrial accidents and in spite of temporary set-backs will be increasingly effective.

In conclusion, the objects of the National Committee for the Prevention of Blindness are stated. The objects are: 1. To endeavor to ascertain, thru study and investigation, any causes, whether direct or indirect, which may result in blindness or impaired vision. 2. To advocate measures which shall lead to the elimination of such causes. 3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes.

H. V. W.

SAVING SIGHT AND CIVIC DUTY. Winifred Hathaway, Secretary National and New York State Committees for the Prevention of Blindness. 8vo 61 pp. December, 1917. 130 E. 22nd St., New York City. Free on request.

This is a demonstration by the Public Health Department of Buffalo of how a typical city conserves the vision of its future citizens. Very few cases of ophthalmia neonatorum are found in Buffalo owing to the midwifery laws of 1885, the necessity for midwives to report puerperal sepsis, the use of Credé's

method, the calling of physicians by the midwives in difficult labor cases, report blanks, visiting nurses, the obligatory microscopic examinations, medical inspection of sore eyes, the prompt filing of birth certificates, through which by persistent application, excellent results have been obtained.

It has been found that in most cases this has been accomplished without legal authority and enforced penalties and it has been demonstrated that there is value in prophylaxis for Buffalo is getting results with the elimination of ophthalmia neonatorum and the prevention of blindness.

The book goes on to describe in detail the work of health centers which include a medical clinic for general treatment and free natal clinic and well baby clinic, those for sick babies and nose, eye and ear and skin clinic and a free dental clinic.

The work is freely illustrated and it shows that adequate provision of conserving the sight of children is concerned, every community, no matter what the size.

Adequate provision for the preventing, reporting and treatment of ophthalmia neonatorum, medical school inspection and nursing service for follow-up work and for the discovery and correction of any and all visual defects and eye diseases, give the best results; and these procedures should be emulated by the health departments and the legal authorities of all other cities. Copies of various health blanks and notifications and reports are appended.

H. V. W.

MANUAL OF OPHTHALMOLOGY. Prepared by the Section of Ophthalmology, Surgery of the Head, Office of the Surgeon General, War Department, Washington, with Appendix. 141 pages; 35 illustrations in the text. Government Printing Office, Washington, 1917.

The need of a small ophthalmic manual for the instruction and guidance of regimental and other surgeons of the National Guard and National Army, and for the use of those who attend courses on ophthalmology in the various camp and cantonment schools, has led to the publication of this work.

As stated in the preface, the manual is concerned only with the commoner diseases and injuries of the eye, and the simpler methods of diagnosis, including a short account of well known methods of detecting refractive errors and of measuring their amount.

A few operative procedures are described, but only those that may be regarded as emergency operations.

As is entirely appropriate in such a handbook, the most useful aspects of medico-military ophthalmology are considered. With this purpose in view, the Appendix furnishes the visual requirements for recruits and enlisted men and for applicants in the Aviation Section of the Signal Corps.

A practical account of visual malin-gering is also given, as well as a description of the most reliable methods of detecting ocular simulation.

A formulary, that includes the commoner remedies and agents used in ophthalmic practice, is also furnished. These prescriptions should be useful to the surgeons for whom the manual is intended. But we believe that as a rule the employment of astringents in eye diseases, —even the mild solutions of tannin, zinc, and copper sulphates formulated on pages 136 and 137—might with advantage to all concerned be left to more expert hands than those for whom this handbook was written. This contention seems all the more to the point since active trachoma (being a cause for discharge from the army), is no longer treated in regular military hospitals. Perhaps it would be a safe rule for the student to confine the use of zinc preparations to those cases in which the Morax-Axenfeld bacillus has actually been discovered in the discharges from the eye under observation.

The book is printed on good paper, it is well bound and, altogether, reflects credit on the group of ophthalmologists on the staff of the Surgeon General who are responsible for its appearance.

TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM. Vol. 37, 421 pp., 31 illustrations, 7 plates. London: J. & A. Churchill, 1917.

This volume is something more than

scientific transactions kept up to a high standard. It is a monument of British pluck and perseverance, of determination to "do one's bit" under the most adverse circumstances. There is evidence of war conditions in the physical makeup of the volume, in the thinner, poorer paper and the smaller number of illustrations. But the names of German members of the Society, honorary or regular, hold their accustomed places in the lists; and there is no falling off in the number of pages or the high scientific standard these pages maintain.

There is evidence of a determination to use to the fullest extent such opportunities as war affords to add to our knowledge of the eye and the means of ameliorating the effects of its injuries. The leading discussion is upon concussion injuries of the visual apparatus. The next takes up the employment of the blind. A timely paper deals with the protection of the eyes in warfare, and another, the fundus lesions in war nephritis. Such papers and discussions give hints of the wealth of scientific observations being made by workers who cannot now prepare them for publication, or lay them before scientific societies.

The cast of mind which can pursue its worthy object in spite of this conflict precipitated by greed for world dominion will certainly triumph over barbarism, however ruthless and "efficient." The lesson of this volume is one of courage and steadfastness. It preserves admirably the general character of its predecessors. There is the same collection of interesting, important, well observed cases; while the more formal papers all have permanent value.

The Bowman Lecture in this volume is by Sir George A. Berry, on Color Sense Phenomena and Some Inferences Which They Seem to Suggest. It occupies 55 pages, and reveals a great deal of speculative thought upon the subject; but points out that we have no established theory of color blindness; only hypotheses more or less helpful in stimulating research, but apt to fetter judgment as to new facts on the part of those who fully accept them as demonstrated theories.

E. J.

CORRESPONDENCE.

OPHTHALMOLOGY IN PHILADELPHIA.

JOURNAL OF OPHTHALMOLOGY: I regret exceedingly that I omitted from my "Historical Sketch of the Rise and Progress of Ophthalmology in Philadelphia" a sufficient notice of the work of Dr. Wm. E. Sweet on the "Localization of Foreign Bodies." The omission was due to the fact that I found it well-nigh impossible to contribute a complete bibliography of the meritorious contributions to ophthalmic science made by Philadelphians. But I had intended to include this work of Dr. Sweet because of its great importance, and I am therefore, asking that you will place this apologetic statement in your correspondence department of the JOURNAL.

I have been very much distressed in my mind by the numerous omissions in the little History. I sincerely trust that you are establishing a department in the JOURNAL for such brief and informal communications as this. With great respect, I am

Very sincerely yours,
SAML. D. RISLEY.

Philadelphia.

PROPHYLAXIS OF OPHTHALMIA NEONATORUM.

JOURNAL OF OPHTHALMOLOGY:

After complimenting you most heartily on the general appearance and contents of the new composite ophthalmologic journal, I desire to call your attention to an article written by Dr. Thomas Hall Shastid on "A Composite Ophthalmia Neonatorum Law." The general character of Dr. Shastid's Law is excellent; and were it not for the fact that I fear an expression by such an eminent authority as Dr. Shastid might lead others into error, I would make no comments upon his Composite Law. But it seems to me that Dr. Shastid has fallen into a grievous error when he alludes to the most important part of the Law, viz, the use of a prophylactic at birth. In the first paragraph of the article he lays down the dictum, in italics, that the most impor-

tant part of the whole procedure is the use of what he calls "the Credé drops" at birth. Nobody will dispute this statement, but in Section 2 of his Law he gives the physician the option of using one of three remedies:

The first is a 1 per cent solution of nitrat of silver.

The second is a strong solution of argyrol.

The third is a strong solution of protargol.

The first suggestion as to the use of nitrat of silver is unquestionably correct, and when a physician uses this solution in the proper manner, he is using the Credé treatment. But when he uses the substitutes—argyrol and protargol—he is not using the Credé treatment. So far as my reading is concerned, Credé has never even mentioned, in his writings, either argyrol or protargol. These are substitutes that have grown up in later years; and, in my opinion—and I believe in the opinion of most experienced ophthalmologists—neither of these remedies can be depended upon as a prophylactic in ophthalmia neonatorum. Argyrol is very weakly bactericidal. Protargol is more energetic in its action. But neither are sufficiently strong, in my opinion, to be regarded as a safe prophylactic in the eyes of newly born children. Sophol is highly regarded by some physicians, but up to the present time the reports from its use are not extensive and favorable enough to warrant its being used as a substitute for nitrat of silver.

At the present time nitrat of silver is far more dependable as a prophylactic than any of the substitutes that have been proposed. Why then, should a physician be given the option of using either nitrat of silver or other inferior drugs? If we are going to have a law on this subject, why not have one that is as nearly right as we can make it? When Dr. Shastid, or anyone else, proposes the use of argyrol or protargol as a substitute for nitrat of silver in the prevention of ophthalmia neonatorum, he is simply making suggestions that, in my

opinion, are not warranted by facts, and that will not be endorsed by most experienced ophthalmologists; and which, further than this, are unreliable and uncertain in their action. Let us then—until

we have something that is thoroughly dependable—adhere to nitrat of silver.

Very respectfully yours,
FRANK ALLPORT.

Chicago.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. As these columns go to press on the 30th of the month contributors should send in their items by the 25th. The following gentlemen have consented to supply the News Item Editor with the news from their respective sections: Dr. James A. Black, San Francisco; Dr. V. A. Chapman, Milwaukee; Dr. A. E. Davis, New York City; Dr. M. Feingold, New Orleans; Dr. Wm. F. Hardy, St. Louis; Dr. Geo. H. Kress, Los Angeles; Dr. W. Holbrook Lowell, Boston; Dr. G. Oram Ring, Philadelphia; Dr. Chas. P. Small, Chicago; Dr. Geo. M. Waldeck, Detroit; Dr. Oscar Wilkinson, Washington. It is desirable that this staff shall be enlarged until every city of importance in the United States shall be covered as well as all foreign countries. Volunteers are therefore needed and it is hoped that they will respond promptly to this call.

DEATHS.

Barnard, Annie T., Southwark, England, of pneumonia.

Moore, Robert L., Columbia, S. C., January 24, 1918.

Tiffany, Flavel B., Kansas City, Mo., January 4, 1918, aged seventy-one.

Tull, Montrose G., Philadelphia, Pa., January 25, 1918.

PERSONAL.

Dr. Clarence Loeb has removed his office to the Marshall Field Annex Building.

Dr. David V. Meikeljohn has been appointed oculist for the Soo Line at Fond du Lac.

Dr. L. N. Grosvenor, formerly of Chicago, now practicing in Huron, South Dakota, has been elected Secretary-Treasurer of the Sioux Valley Eye and Ear Academy.

Dr. M. Uribe-Troncoso, formerly of Mexico City, has been made Secretary of the Spanish Medical Society, La Sociedad Medica Hispania-Americana, in New York City.

At the annual meeting of the Chicago Otolaryngological and Rhinological Society, Dr. Frank Allport was elected president, Dr. Charles H. Long, vice-president, and Edward P. Norcross, secretary.

Dr. James A. Spalding, of Portland, Me., for many years a contributor to the literature of ophthalmology, has been made President of the Maine Medical Association, and is also serving as Editor of the Maine Medical Association Journal.

MILITARY NOTES.

Dr. J. L. McCool, of Portland, Oregon, has been placed in charge of the Aviation Examining Unit, with rank of Captain.

Captain William H. Huntington, of Washington, D. C., has been assigned to the Army Medical School as instructor in ophthalmology.

The eye, ear, nose and throat staff at Camp Wheeler is happy in the realization of its hopes of being installed in its new building.

Captain Edward E. Maxey, of Boise, Idaho, has been transferred for temporary duty to Camp Sherman, Chillicothe, Ohio, from Fort D. A. Russell, Wyoming.

Major P. J. H. Farrell, on duty at Camp Travis, Texas, who has been very ill with pneumonia, is reported to have successfully passed the crisis and is now on the way to recovery.

Our compatriot and confrere, Edmond Landolt, of Paris, whose two sons are ophthalmic surgeons, in correspondence with Dr. Würdemann, writes that his elder son, Fernand Landolt, Major 2nd Class, Reserve Medical Service 167th Regiment, Infantry, was wounded in the hip and forearm at Verdun, and is now undergoing recovery at the Champs Elysees Hospital. He has received the grade of Chevalier in the Order of the Legion of Honor on account of his great courage as Chief of the Medical Service, his remarkable professional ability and devotion to duty. He served in the front line and rendered great services, particularly during August and September of 1917. He was wounded severely on the 20th of October, 1917, in active performance of his duty. Two citations have been made. This last nomination carries with it the Croix de Guerre with the palm. Dr. E. Landolt's second son, Major Marc Landolt, is director of the Ophthalmic Hospital at Clermont.

COMING MEETINGS.

Ophthalmological Society of the United Kingdom, London, May 2-4.

Section on Ophthalmology, American Medical Association, Chicago, June 11-14.

American Ophthalmological Society, Eastern Point, New London, Conn., July 9-10.

Oxford Ophthalmological Congress, Oxford, England, July 10-12.

American Academy Ophthalmology and Otolaryngology, Denver, Colo., August 6-7-8.

Pacific Coast Oto-Ophthalmological Society, Salt Lake City, Utah, August 12-13.

SOCIETY NOTES.

A mid-winter meeting of the Indiana eye, ear, nose and throat specialists was held in Indianapolis, March 6th and 7th.

At the meeting of the eye, ear, nose and throat section of the Indiana State Medical Society, held February 6th and 7th, there was organized the Indiana Society of Ophthalmology and Otolaryngology.

The Chicago Ophthalmological Society is to cooperate with the Chicago Laryngological and Otolological Society in arranging special clinics once a month, on the two days on which these two societies hold their regular meetings.

The regular meeting of the Chicago Ophthalmological Society was held on February 18th. It was voted to have printed on the regular monthly programs the temporary addresses of those members of the society who are on active duty at the different camps.

At the next meeting of the Illinois State Medical Society, May 21st, 22nd, and 23rd, at Springfield, Ill., the Eye, Ear, Nose and Throat Section will hold a Clinic and Demonstration of Cases on Tuesday, the 21st, from 10. A. M. to 5 P. M. Dr. J. Sheldon Clark is Chairman of the Section.

The Annual Congress of the Ophthalmological Society of the United Kingdom will be held in London, May 2, 3, and 4, under the presidency of E. Treacher Collins, F. R. C. S. The session of the first day will be held at the rooms of the Royal Society of Medicine; on the second morning a visit will be made to the Metropolitan Asylum's Board Ophthalmia School, Swanley. In the afternoon a visit will be made to the museum of the Royal College of Surgeons, and the evening session will be held at the Royal Society of Medicine. The session of May 4th will be clinical, and will be held at the National Hospital for Paralysis, Queen's Square.

MISCELLANEOUS.

Under the auspices of the Pennsylvania Association for the Blind, a museum of all appliances for the prevention of blindness is being opened in Pittsburgh.

The Irish Local Government Board has appointed an Advisory Committee on matters relating to the care and supervision of the blind in Ireland. The Chairman is Sir Thomas Stafford, Bart., C. B.

Twenty-five thousand dollars for the establishment of a model eye hospital in Palestine, has been given by Mrs. Peter J. Schweitzer of Brooklyn, N. Y. The hospital will be under

the supervision of Dr. Joseph Krinsky, and be modeled on American lines.

From the records of the first draft, when more than two and a half million men from all parts of the United States were examined physically to determine their fitness for military service, it is reported that defective eyes caused nearly three times as many rejections as any other physical defect.

The Pennsylvania Association for the Blind has offered to the members of the senior class of the Medical School, University of Pittsburgh, a prize of \$100 for the best essay of two thousand words on the prevention of blindness. The committee on award consists of some of the best known oculists and laymen in western Pennsylvania. It is expected to make this offer annually to each senior class.

In carrying forward its work, the National Committee for the Prevention of Blindness has published pamphlets dealing with causes of preventable blindness; has made a loan collection of lantern slides of more than 500 titles; has served nearly every state in the Union and several foreign countries; and publishes five times a year the *News Letter*, sent free to all interested persons. E. M. Van Cleve, Managing Director, 130 East Twenty-second street, New York City.

Senator Owen and Representative Dyer introduced into the Senate and House respectively the following bill: "That hereafter the Commissioned officers of the Medical Corps and of the Medical Reserve Corps of the United States Army on active duty shall be distributed in the several grades in the same ratios heretofore established by law in the Medical Corps of the United States Navy." Medical men throughout the country should support these bills by writing their senators and representatives to vote for their passage.

Neglected supervision of the child by its parents before it enters school is the subject of sharp rebuke and admonition from Dr. Wilmer Krusen, Director of the Department of Public Health and Charities of Philadelphia. Dr. Krusen says: "The eyes, ears, teeth, nose and throat should receive special attention, as defects of these parts of the body are most frequent. Defective vision must be corrected if the child is expected to keep up with his studies and to maintain the same standard as the normal child."

An outstanding feature of the relief rendered after the Halifax disaster, the explosion of the munition ship *Mont Blanc* the morning of December 6, 1917, was the prompt and efficient surgical service rendered in saving sight. More than 1,000 cases of eye injuries were handled by the oculists of Halifax, Truro and other Canadian cities, and by the specialists from Boston, Providence and elsewhere who came to the assistance of the overwhelmed local physicians as soon as it was known that there was unexampled need for help. The result of this promptness and efficiency is saving of many from total blindness.

OPHTHALMIC LITERATURE.

Under this head continuing the "Index of Ophthalmology" heretofore published in *Ophthalmic Literature* will be found the subjects of all published papers received during the last month, that bear to an important extent upon ophthalmology. The subject is indicated rather than the exact title given by the author. Where the original title has been in a foreign language it is translated into English. The journal in which the paper is published will indicate the language of the original.

The names of the different journals are indicated by abbreviations which generally correspond to those used by the *Index Medicus*, the *Journal of the American Medical Association*, and the *British Journal of Ophthalmology*. We will from time to time publish the list of ophthalmic journals, with the abbreviations used for each. Often a single letter discriminates between journals published in different languages. Thus "Arch. of Ophth." refers to the Archives of Ophthalmology, published in English; "Arch. d'Ophth." indicates the French Archives d'Ophthalmologie; "Arch. de Oftal." refers to the Archives de Oftalmologia Hispano-Americanos, while "Arch. di Ottal." indicates the Italian Archivio di Ottalmologia.

In this index of the literature the different subjects are grouped under appropriate heads; so that all papers bearing on the same, or closely related subjects, will be found in one group. The succession of the groups is the same from month to month, and identical with that of the Digest of the Literature. Where a paper clearly refers to two subjects that belong in different groups, it will be noticed in both groups.

Each reference begins with the name of the author in heavyface type. This is followed by the subject of his paper. Then in brackets a number with (ill.) indicates the number of illustrations, or a number with (pl.) the number of plates illustrating the article, (col. pl.) indicates colored plates. (Abst.) shows that it is an abstract of the original article. (Bibl.) tells that the paper is accompanied by an important bibliography. (Dis.) means that the paper was read before some society and gave rise to a discussion which is published with it.

It is desired to notice every paper as soon as possible after it is published. Readers will confer a favor by sending titles they notice have been omitted, with journal and page of publication; and of their own papers, sending either a copy of the journal in which each appeared, or a reprint. These should be sent as soon as possible to 318 Majestic Building, Denver, Colorado.

DIAGNOSIS.

Alperin, D. The Ophthalmoscope an Aid in the Diagnosis of Obscure Systemic Diseases. *Eclic. Med. Jour.*, v. 78, p. 59.

Parker, W. R. Examination of Malingerers. *Med. War Manual*, No. 3. Philadelphia, Lea and Febiger.

THERAPEUTICS.

MacWhinnie, A. M. Subconjunctival Injections (4 ill.). *New York Med. Jour.*, v. 108, p. 343.

Metz, R. B. Effect upon Eye of Tincture of Iodin. *Cleveland Med. Jour.*, v. 17, p. 18.

OPERATIONS.

Maddox, E. E. Close vs. Distant Illumination for Operation. *Brit. Jour. Ophth.*, v. 2, p. 84.

REFRACTION.

Clarke, E. Value of Ophthalmometer in Estimating Refraction of Eye. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 343.

Cridland, B. Correction of Errors of Refraction. *Birmingham Med. Rev.*, 1917, p. 45.

Edridge-Green, F. W. Cause and Prevention of Myopia (1 ill.). *Lancet*, Jan. 26, p. 137.

Kiehle, F. A. Transitory Hyperopia in Diabetes. *Ann. of Ophth.*, v. 26, p. 564.

OCULAR MOVEMENTS.

Cantonnet, A. Hole in Hand Test for Binocular Vision. *Presse Méd.*, Paris, v. 25, p. 686. *Abst. Jour. Amer. Med. Assn.*, v. 70, p. 422. *New York Med. Jour.*, v. 108, p. 379.

Graef, C. Vertigo—Nystagmus. *New York Med. Jour.*, v. 108, p. 241.

Hoeve, J. van der. Latent Nystagmus. *Ann. d'Ocul.*, v. 154, p. 738.

Landolt, M. Binocular Vision (6 ill.). *Arch. d'Ophth.*, v. 35, p. 720.

Sautter, A. C. Ocular Palsies in Infantile Paralysis. *Ann. of Ophth.*, v. 26, p. 541.

Worth, C. Advancement Operations. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 365.

CONJUNCTIVA.

Broyles, C. J. Inflammation of Conjunctiva Resembling Trachoma. *Ann. of Ophth.*, v. 26, p. 560.

Crawford, J. P. Bulgarian Bacillus Culture in Treatment of Trachoma. *Ann. of Ophth.*, v. 26, p. 557.

- Derby, G. S.** Collective Treatment of Ophthalmia Neonatorum. *Brit. Jour. Ophth.*, v. 2, p. 121.
- Gibson, W. S.** Etiology of Phlyctenular Conjunctivitis. *Amer. Jour. Dis. Children*, v. 15, p. 81.
- Giuseppe, J.** Trachoma in Italy. *Gazz. degli Ospedali e delle Cliniche*, Milan, v. 38, pp. 578, 1316.
- Montaño, E. F.** Gonorrheal Ophthalmia. *Gaceta de la Acad. de Med.*, v. 11, p. 1. *Abst. Jour. Med. Assn.*, v. 70, p. 352.
- Perez Jimenez.** Acute Catarrhal Conjunctivitis Due to Koch-Weeks Bacillus. *Arch. de Oftal. Hispano-Amer.*, v. 17, p. 302. *Abst. Ann. of Ophth.*, v. 26, p. 641.
- Schweinitz, G. de.** Trachoma and Common Forms of Conjunctivitis. *Med. War Manual*, No. 3. Philadelphia: Lea and Febiger.
- CORNEA AND SCLERA.**
- Carreras, B.** Ethylhydrocuprein in Treatment of Corneal Ulcers. *Boletín del Colegio de Medicos de Gerona*, Feb. and March, 1917. *Espana Oft.*, Nov., 1917, p. 18.
- Daniels, C. W.** Trypanosome Keratitis. *Brit. Jour. Ophth.*, v. 2, p. 83.
- Lloyd, I.** Cocain Keratitis. *Ann. of Ophth.*, v. 26, p. 568.
- Tyrrell, F. A. C.** Mooren's Ulcer Treated with Conjunctival Flap. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 205.
- ANTERIOR CHAMBER AND PUPIL.**
- Lamb, H. D.** The Pupil from the Ophthalmologist's Standpoint. *Jour. Missouri State Med. Assn.*, v. 15, p. 52.
- Tuckett, I. L.** Siderosis Affecting Innervation of Pupil. *Brit. Jour. Ophth.*, v. 2, p. 79.
- UVEAL TRACT.**
- Collins, E. T.** Subchoroidal Hemorrhage from Concussion, Relation to Commotio Retinae; Holes at Macula; Pigmentation of Retina; Pigmentary Disturbance of Macula (1 col. pl.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 112.
- Demaria, E. B.** Double and Serous Iridocyclo-choroiditis Associated with Vitiligo. *Arch. de Oft.*, *Hisp.-Amer.*, v. 17, p. 355. *Ann. of Ophth.*, v. 26, p. 641.
- Harry, P. A.** Treatment of Cyclitis. *Prescriber*, v. 11, p. 179.
- Hudson, A. C.** Unilateral Melanosis of Iris Segment with Pigment Areas of Lid Margin and Pigmented Nevi in Skin of Face in Dark Complexioned Subject. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 174.
- Loeb, C.** Hereditary Coloboma of Iris (1 ill. Bibl.). *Ann. of Ophth.*, v. 26, p. 573.
- Maxwell, E. M. and Kiep, W. H.** Iritis and Cyclitis in Dysenteric Patients (2 charts). *Brit. Jour. Ophth.*, v. 2, p. 71.
- Mayou, M. S.** Colloid Nodules in Girl's Choroid. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 227.
- Herpes Zoster Affecting Ciliary Nerves. (Iridocyclitis.)** *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 226.
- Osborne, E. S.** Relation of Focal Infection to Ocular Disease. *Jour. Med. Assn. Georgia*, v. 7, p. 197.
- Prélat.** Bilateral Iridocyclitis with Antityphoid Vaccination. *Arch. d'Ophth.*, v. 35, p. 742.
- Westfall, L. M.** Iridocyclitis due to Focal Infection from Tooth. *Jour. Oklahoma State Med. Assn.*, v. 11, p. 61.
- SYMPATHETIC OPHTHALMIA.**
- Morax, V.** Clinical Statistics on Sympathetic Ophthalmia in the Army. *Ann. d'Ocul.*, v. 154, p. 705.
- Poulard, A.** Sympathetic Ophthalmia. *Ann. d'Ocul.*, v. 154, p. 702.
- Traumatic Sympathetic Ophthalmia.** *Ann. d'Ocul.*, v. 154, p. 697.
- GLAUCOMA.**
- Cilleruelo.** Antiglaucomatous Iridosclerectomy. *Arch. de Oft. Hisp.-Amer.*, v. 17, p. 268. *Abst. Ann. of Ophth.*, v. 26, p. 638.
- Feingold, M.** Late Infection after Elliot Operation not Always Fatal. *South. Med. Jour.*, v. 11, p. 150.
- Grimsdale, H.** Congenital Buphthalmos with Enlargement of Retinal Arteries. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 175.
- Odeneal, T. H.** Elliot Trepchine Operation and Iridotaxis on Same Patient for Glaucoma. *Ann. of Ophth.*, v. 26, p. 601.
- CRYSTALLINE LENS.**
- Barraquer, I.** Ideal Extraction of Cataract. *Arch. de Oft. Hisp.-Amer.*, v. 17, pp. 252, 274. *Abst. Ann. of Ophth.*, v. 26, p. 639.
- Elliot, R. H.** History of Couching for Cataract (5 ill. Bibl.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 264.
- Taylor, S. J.** Dilation of Pupil in Cataract Extraction. *Brit. Jour. Ophth.*, v. 2, p. 119.
- Thomson, E.** Atropin in Cataract Extraction. *Brit. Jour. Ophth.*, v. 2, p. 117.
- VITREOUS.**
- Peck, W. H.** Treatment of Vitreous Opacities. *Ann. of Ophth.*, v. 26, p. 580.
- RETINA.**
- Collins, E. T.** Subchoroidal Hemorrhage from Concussion, Relation to Commotio Retinae; Holes at Macula; Pigmentation of Retina; Pigmentary Disturbance of Macula (1 col. pl.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 112.
- Gunn's Dots.** *Brit. Jour. Ophth.*, v. 2, p. 85.
- Kirk, J.** Eye Changes in Trench Nephritis. *Brit. Med. Jour.*, Jan. 5, p. 7; *Jour. Amer. Med. Assn.*, v. 70, p. 490; *Med. Rec.*, Feb. 16, p. 287.

Menacho, M. Congenital Vascular Anomalies of Ocular Fundus. *Arch. de Oft. Hisp.-Amer.*, v. 17, p. 229. *Ann. of Ophth.*, v. 26, p. 638.

Schevensteen, J. Retino-choroidal Complications with Spirochetosis Ictero-hemorrhagica. *Ann. d'Ocul.*, v. 154, p. 728.

Tyrrrell, F. A. C. Symmetrical Pigmented Changes at Macula. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 237.

OPTIC NERVE.

Buchanan, L. Opaque Nerve Fibres. (4 ill.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 166.

Collins, E. T. Small Tortuous Veins on Optic Disc with Small Vascular Nevi of Skin of Eyelid and Nasal Septum. (1 ill.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 171.

Espigo, L. D. Tabetic Blindness. *Cronica Med.*, v. 34, p. 402; *Abst. Jour. Amer. Med. Assn.*, v. 70, p. 351.

Fisher, J. H. Leber's Disease with Changes in Sella Turcica. (2 ill.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 251.

Marin Amat, M. Right Facial Paralysis and Left Optic Atrophy from Trauma. *Arch. de Oft. Hisp.-Amer.*, v. 17, p. 375; *Ann. of Ophth.*, v. 26, p. 642.

Pollock, W. B. I. Leber's Disease with X-ray Examination of Sella Turcica. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 247.

VISUAL TRACTS AND CENTERS.

Congenital Word Blindness. (Editorial.) *Med. Rec.*, v. 93, p. 157.

Conkey, C. D. Ocular Symptoms of Brain Tumor. *Jour.-Lancet*, v. 38, p. 70.

Ginestous, E. Lateral Homonymous Hemianopsia. *Rev. Internat. de Méd. et de Chir.*, Paris, 1917, v. 28, p. 53.

Peterson, J. Striking Illusions of Movement of Single Light on Mountains. *Amer. Jour. Psychol.*, v. 28, p. 476.

COLOR VISION.

Berry, G. A. Color-Sense Phenomena and Inferences Therefrom (7 ill.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 5.

LIDS.

Tuckett, I. L. Functional Blepharospasm with Temporary Loss of Sight. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 188.

ORBIT.

Caillaud, M. Traumatic Bilateral Pulsating Exophthalmos (1 ill.). *Arch. d'Opht.*, v. 35, p. 746.

Kalt, M. Orbital Exostosis in Young Subject (2 ill.). *Ann. d'Ocul.*, v. 154, p. 723.

Mayou, M. S. Orbital Suppuration (8 ill.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 191.

Pulsating Exophthalmos Following Head Wound (Dis.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 186.

Terson, A. Orbital Inflammation in Infant. *Arch. d'Opht.*, v. 35, p. 739.

PARASITES.

Navarrete and Mas. Myiasis of Conjunctiva. *Arch. de Oftal. Hisp.-Amer.*, v. 17, p. 273. *Ann. of Ophth.*, v. 26, p. 637.

TUMORS.

Hepburn, M. L. Papilloma of Conjunctiva (1 col. pl.). *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 190.

Marin, M. Angioma of Conjunctiva of Traumatic Origin. *Arch. de Oft. Hisp.-Amer.*, v. 17, p. 325; *Abst. Ann. of Ophth.*, v. 26, p. 639.

Opin. Benign Tumor of Choroid (3 ill.). *Ann. d'Ocul.*, v. 154, p. 724.

INJURIES.

Cantonnet, A. Eyelashes Driven Into Anterior Chamber. *Progrès Méd.*, Nov. 17, 1917, v. 32, p. 398; *Abst. Lancet*, Jan. 19, p. 110.

Duverger. Resection of Anterior Segment of Globe in Injury. *Arch. d'Opht.*, v. 35, p. 705.

Giuseppe, T. Hereditary Ocular Lesions. *Gazz. d. Osp. Milan*, v. 38, p. 577.

GENERAL DISEASES.

Abadie, C. Long Continued Mercurial Treatment in Ocular Syphilis. *Ann. d'Ocul.*, v. 154, p. 734.

Craft, M. T. Eye Conditions in Acromegaly. *Neurol. Bull.*, v. 1, p. 32.

Frias Ornate. Ocular Disturbances in Diseases of Nose. *España Oft.*, Nov., 1917, p. 15.

Ginestous, E. Eye Lesions After Typhoid Fever. *Progrès Méd.*, v. 32, p. 449; *Jour. Amer. Med. Assn.*, v. 70, p. 578.

Leoz, G. Ocular Sporotrichosis. *Arch. de Oft. Hisp.-Amer.*, v. 17, p. 293.

Martinez. Amaurosis the First Sign of Uremia. *España Oft.*, Nov., 1917, p. 16.

Moret. Ocular Troubles with Spirochetosis Ictero-hemorrhagica. *Arch. Méd. Belges*, Dec., 1917, p. 1105.

Pierson, P. H. Tuberculosis of Eye. *California State Jour. Med.*, v. 15, p. 74.

Posey, W. C. Syphilis of Eye. *New York State Jour. Med.*, v. 18, p. 48.

Poulard, A. Ocular Syphilis. *Presse Méd.*, Nov. 15, 1917; *Abst. New York Med. Jour.*, v. 108, p. 278.

Zarzycki, P. Eye and Ear Complications in Meningitis. *Bull. de l'Acad. de Méd.*, Paris, v. 78, p. 748; *Abst. Jour. Amer. Med. Assn.*, v. 70, p. 492.

COMPARATIVE OPHTHALMOLOGY.

Swindle, P. F. Biological Significance of Eye Appendages of Organisms. *Amer. Jour. Psychol.*, v. 28, p. 486.

HYGIENE.

Irvin, R. B. Classes for Conservation of Vision in City Public Schools. *Ohio State Med. Jour.*, v. 14, p. 81.

Smith, S. F. Eye, Ear, Nose and Throat and Conservation of Health of School Children. *Jour. Florida Med. Assn.*, v. 4, p. 69.

OPHTHALMIC SOCIOLOGY AND HISTORY.

American Journal of Ophthalmology. *Jour. Amer. Med. Assn.*, v. 70, p. 392.

Crisp, W. H. History of Operation for Cataract. *Ann. of Ophth.*, v. 26, p. 585.

Eye Examinations in Selective Service for Army. *Jour. Amer. Med. Assn.*, v. 70, p. 318.

Freeman, L. Operative Surgery of Western Hemisphere (Ill.). *Jour. Amer. Med. Assn.*, v. 70, p. 443.

Galloway, A. R. Visual Standards for British Army. *Brit. Jour. Ophth.*, v. 2, p. 120.

Greenwood, A. Military Ophthalmic Surgery. *Med. War Manual*, No. 3, Philadelphia: Lea and Febiger.

Henderson, C. G. Blindness in India. *Med. Press*, Jan. 9, 1918, p. 23.

Optometry Law in Illinois. *Jour. Amer. Med. Assn.*, v. 70, p. 483.

Pearson, A. Employment of Blind. *Trans. Ophth. Soc. United Kingdom*, v. 37, p. 133.

Saving Sight a Civic Duty. *Natl. Comm. for Prevention of Blindness*. No. 13. New York City.

Shastid, T. H. History of Ophthalmology. *Amer. Encyclo. and Dict. of Ophth.*, v. 11, p. 8525.

Story, J. B. Sir William Robert Wills Wilde. *Brit. Jour. Ophth.*, v. 2, p. 65.

Uribe-Troncoso, M. Ophthalmology in the Medical Course. *Gaceta Med. de Mexico*, v. 11, p. 123. *Abst. Jour. Amer. Med. Assn.*, v. 70, p. 424.